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Argument Marking with Prepositions in German: A Constructional Approach to *auf* ('on')

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Argument marking prepositions in German are part of more complex structures referred to here as verb-preposition combinations (verb-PPs), e.g. *warten auf* ('to wait for') and *pochen auf* ('to insist on'). The preposition *auf* ('on') attaches to a wide range of verbs to form such combinations in which *auf* encodes different semantic relations that elude concrete description. Nevertheless, previous research in valency theory and related approaches could identify patterns in the distribution of verb-PP_{auf} combinations (Eroms 1981, 1991, Lerot 1982, Bouillon 1984, Domínguez Vázquez 2005), based on perceived similarities in the meaning of the governing verbs. Cognitive linguistics provides insights into seemingly opaque senses of prepositions by analyzing them as motivated by metaphorical meaning extension (Brugman 1988, Lakoff 1987, Meex 2001, Liamkina 2007). Finally, generative approaches scrutinize the semantic relationships between verbs and their PP-arguments and systematize them under the concept of semantic roles (Fillmore 1968, Rauh 1993). However, none of these approaches can fully account for the distribution of verb-PP_{auf} combinations in German.

This dissertation proposes a novel approach towards identifying and analyzing the distributional patterns of verb-PP_{auf} combinations by applying insights from Frame Semantics (Fillmore 1982, 1985) and Construction Grammar (Goldberg 1995, 2006).

Goldberg's theory of argument structure constructions already served as a model for analyzing *auf* as a partially schematic argument structure construction encoding the meaning 'future orientation/future event' (Rostila 2007). Based on a large amount of corpus data, I show that such generalizing accounts are better arrived at by employing a usage-based bottom-up approach to verb-PP_{auf} combinations. I argue that the detailed semantic and syntactic information provided by the lexical database FrameNet for each lexical unit can be used to identify distributional patterns and to describe them in detail. Furthermore, I argue that integrating the verb-PP_{auf} combinations and the frames they evoke into a hierarchical lexical-constructional network allows us to discover substantiated generalizations about these combinations while at the same time preserving the description of their idiosyncratic features.

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Chapter 1:

Introduction

1.1 Aim and Scope

The goal of this dissertation is to examine combinations of verbs with prepositional phrases headed by *auf* ('on') and to arrive at an analysis that accounts for their syntactic and semantic distribution in German.[1] The prepositional phrases (henceforth PPs) in verb-PP$_{auf}$ combinations are arguments of the verb that often need to be overtly realized at the syntactic level. They are referred to by different names in the linguistic literature: including prepositional object (e.g. Breindl 1989, Heringer 1968), oblique object (e.g. Bresnan 2001, Goldberg 1995), prepositional complement (e.g. Brinton 2000, Herbst 2011), and "Präpositivergänzung" ('prepositive complement', Ágel 2000, Domínguez Vázquez 2005). Consider the examples in (1.1) which illustrate the verb-PP$_{auf}$ combinations in question.

(1.1) a. Tom brennt auf sein Comeback.
Tom.NOM burns on his comeback
'Tom is looking forward to his comeback.'

b. Tom besteht auf den Verkauf des Hauses.
Tom.NOM insists on the selling the house.GEN
'Tom insists on selling the house.'

The prepositional phrases in (1a-b) are constituents of these sentences "… whose overt or implied presence is required for well-formedness" (Trask 1992: 20); and if omitted, these sentences are often not acceptable or their meanings change as shown in (1.2a-b).

[1] See Heringer (1968), Eroms (1981, 1991), Lerot (1982), Breindl (1989), Fries (1988), Hundt (2001), Czepluch (1996), Helmantel (1998), Hertel (1983), Rostila (2007), and Sicherl (1995), among others for earlier discussions.

(1.2) a. Tom brennt.
Tom.NOM burns
'Tom is burning.'
b. *Tom besteht.
Tom.NOM insists
'Tom is insisting.'

Verb-PP$_{auf}$ combinations are seemingly a very heterogeneous group. The examples in (1.3) show that the verbs occurring in verb-PP$_{auf}$ combinations are not restricted to a particular syntactic or semantic class.

(1.3) a. Tina vertraut auf ihre Kraft.
Tina.NOM trusts on her strength
'Tina trusts in her strength.'
b. Kurt pocht auf die Einhaltung der Regeln.
Kurt.NOM knocks on the adherence the rules.GEN
'Kurt is insisting on adhering to the rules.'
c. Das Gesetz läuft auf eine Arbeitszeitverkürzung hinaus.
the law.NOM runs on a working-time-shortening PTCL.out
'The law will result in a shorting of the labor time.'
d. Magda wartet auf den Frühling.
Magda.NOM waits on the spring.
'Magda is waiting for the spring.'
e. Kerries Ansichten beruhen auf Fakten.
Kerrie's opinions.NOM are-based on facts.
'Kerries opinions are based on facts.'

The verbs *vertrauen* ('to trust') and *warten* ('to wait') in (1.3a, d) express some kind of cognitive state or activity, *hinauslaufen* ('to run outside') is a motion verb used in a metaphoric sense in (1.3c); *pochen* ('to knock') in (1.3b) is a physical activity and is also used metaphorically in this context; and *beruhen* ('to be based on') in (1.3e) describes a state of an abstract entity.

Furthermore, the PP$_{auf}$'s as well as the preposition *auf* do not have the same meaning in these sentences; in fact, it is very difficult to describe the meanings of these PPs and their semantic relationships to the governing verb. The PPs *auf die Einhaltung der Regeln* ('on the adherence to the rules'), *auf eine Arbeitszeitverkürzung* ('in a

shortening of labor time'), and *auf den Frühling* ('for the spring') in (1.3b-d) could be described as a 'goal' in terms of semantic roles,[2] in (1.3c-d) perhaps with a reference to the future. The phrases *auf ihre Kraft* ('in her strength') and *auf Fakten* ('on facts') in (1.3a, e) could be said to be metaphorical foundations (Lakoff and Johnson 1980); in terms of semantic roles they are probably best described as 'source'. However, these semantic descriptions are imprecise and not very meaningful; moreover, there exists no clear methodology of how to arrive at these descriptions. These observations led Abraham (2006) and Steinitz (1992, 1997) to the conclusion that the distribution of verb-PP combinations is arbitrary, i.e. there are no general rules that can account for the combinatorial possibilities of verbs with prepositional complements in German. If this were indeed the case, pairings of verbs with PP_{auf} could be said to be conventionalized units.

On the other hand, smaller groups within the category of verb-PP_{auf} combinations can be identified. Consider the examples in (1.4)-(1.6)

(1.4) a. Rosa arbeitet auf einen Zeitgewinn hin.
Rosa.NOM works on a time-win PTCL.towards
'Rosa works towards a gain of time.'

b. Angela steuert auf ein neues Ziel hin.
Angela.NOM steers on a new goal PTCL.towards
'Angela steers towards a new goal.'

c. Die Politik wirkt auf die Beseitigung der
the politics.NOM works on die removal the
Mängel hin.
defects.GEN PTCL.towards
'The politicians work towards the removal of the deficits.'

(1.5) a. Eva wartet auf den Studenten.
Eva.NOM waits on the student.
'Eva is waiting for the student.'

[2] Semantic roles are also called deep cases (Fillmore 1968) or thematic roles (Gruber 1965, Frawley 1992, Halliday 2004, Palmer 1994, among others).

b. Konrad hofft auf schönes Wetter.
Konrad.NOM hopes on nice weather.
'Konrad is hoping for nice weather.'

c. Junker Jörg spekuliert auf Johanns Seele.
nobleman Jörg.NOM specultates on Johann's soul.
'The nobleman Jörg is speculating for Johann's soul.'

(1.6) a. Tanja konzentriert sich auf die Schule.
Tanja.NOM concentrates REFL on the school.
'Tanja is concentrating on school.'

b. Till fokussiert sich auf seine Arbeit.
Till.NOM focuses REFL. on his work
'Till is focusing on his work.'

c. Uwe dringt auf die Hochzeit.
Uwe.NOM insists on the wedding
'Uwe insists on the wedding.'

The sentences in (1.4) all express a similar situation: the subjects are acting actively towards a specific goal. The examples in (1.5) denote a situation in which the subject has some kind of cognitive attitude towards a possibility in the future, and the sentences in (1.6) present situations in which the subjects place an emphasis on some event or activity. The groups of verb-PP$_{auf}$ combinations in (1.4)-(1.6) intuitively form subcategories of this construction but theoretical approaches do not provide an underpinning to confirm and account for the intuition. That is probably the reason why verb-PP combinations, PPs, and prepositions have received constant attention in various linguistic theories. It is the goal of this dissertation to describe and account for the distributional patterns that can be found among verb-PP$_{auf}$ combinations in German and to provide a sound theoretical basis that allows us to capture the specific information about these combinations and allow generalizations about them at the same time, thus avoiding Langacker's (1987: 29) rule/list fallacy.

Approaches like valency theory (Abd Er-Rahman 1984, Eroms 1981, 1991, among others) and generative approaches (Fillmore 1968, Abraham 2006, Asbury 2005, Rauh 1993, among others) have focused on the meaning of the PP and the preposition to

identify the syntactic status of the PP thereby arriving at two different types of prepositions that are illustrated in (1.7).

(1.7) a. Niko schläft auf dem Sofa.
Niko.NOM sleeps on the sofa
'Niko is sleeping on the sofa.'
b. Josie wartet auf die Spaghetti.
Josie.NOM waits on the spaghetti
'Josie is waiting for the spaghetti.'
c. Euer Streiten geht mir auf den Keks.
your quarreling.NOM goes me.DAT on the cookie
'Your quarreling is getting on my nerves.'

The prepositional phrase in (1.7a) is an adverbial phrase that denotes a locative relation. In this example, it encodes the position of the subject noun phrase ('Niko') as being on top of and in contact with the noun phrase (NP) within the PP_{auf} ('Sofa'). This relation is also referred to as the figure-ground relation (Langacker 1987) or trajectory-landmark relation (Lakoff 1987) in cognitive linguistics. It describes a situation where a figure or trajectory is profiled against a background, i.e. the ground or landmark. The preposition *auf* in (1.7a) therefore has a locative meaning; it determines where the figure is located with regard to the ground. The preposition *auf* provides the vital information about the local configuration, and the configuration changes when *auf* is replaced by another preposition (cf. 1.8) because the other prepositions mean something else.

(1.8) a. Niko schläft auf/ neben/ hinter/ unter dem Sofa.
Niko.NOM sleeps on/ next to/ behind/ under the sofa
'Niko is sleeping on/next to/behind/under the sofa.'
b. Klaus stellt das Brot auf/ unter/ neben den Tisch.
Klaus.NOM puts the bread on/ under/ next to the table
'Klaus is putting the bread on/under/next to the table.'

In contexts like (1.8), *auf* has a lexical meaning based on which the figure-ground relation is interpreted. Note that the lexical meaning of *auf* is not limited to sentence

adverbials; the PP_{auf} in (1.8b) is an adverbial complement (Breindl 2006). The lexical meaning of the preposition combines with the meaning of the sentence, *Niko schläft* ('Niko is sleeping') or with the predicate *to put* ('to place'), i.e. the meaning of the sentences is compositional (Akmajian et al. 1995). The meaning of the complex structure is arrived at by combining the lexical material with the syntactic rules of German, and therefore it is transparent.

The same decoding process does not work for the examples in (1.7b-c). The sentence in (1.7c) contains an idiomatic phrase (*etwas/jemand geht jemandem auf den Keks* 'something/someone is getting on someone's nerves') that must be memorized as a chunk. The PP_{auf}'s in (1.7b-c) cannot be defined in terms of a local constellation of a figure vs. a ground and therefore the preposition does not have a locative meaning in these sentences. Also, other semantic categories like temporal, modal, or causal cannot be applied to *auf* in these contexts. Therefore, prepositions in sentences like (1.7b) are deemed to be functional elements rather than lexical elements identical in their function to morphological case marking, e.g. Fillmore (1968), and Abraham (2006).

However, this raises the question of how the case marker *auf* in (1.7b) is related to the lexical preposition in (1.7a). Generative accounts following Chomsky (1965, 1981) assume different modules within the language system, i.e. "… more or less autonomous components of a grammar" (Trask 1992: 174).[3] The syntax containing the rules that generate grammatically acceptable sentences in a language is one such module; the lexicon is another. In this view of strict separation between the syntax and the lexicon, the class of prepositions must be divided into a group of lexical prepositions (Jackendoff 1973) and a group of case prepositions, i.e. the argument marking prepositions (Rauh

[3] The quote continues to say that "… each module of a grammar makes its own independent requirements as to well-formedness, and a well-formed structure is one which is licensed by every one of the modules independently" (Trask 1992: 174).

1993). Case prepositions are thought to encode the semantic relationship of the PP argument to the verb, i.e. the semantic roles (Gruber 1965, Fillmore 1968). However, general rules that map case prepositions to semantic roles could not be established by generative approaches (Fillmore 1968, Rauh 1993). The case prepositions are therefore relegated to the periphery of the grammar[4] as arbitrary case markers attached to the governing verbs and they are not analyzed. The focus of generative theories lies on general, potentially universal rules that leave no room for exceptions which belong to a different compartment of the language faculty. Langacker (1987: 29) refers to this strict separation as the rule/list fallacy, which means the mutual exclusion of rules and lists. The individual lexical forms of linguistic patterns ("lists") that can be explained in terms of generalizations ("rules") are excluded from the core of the grammar for economic reasons.

Syntactic rules and generalizations are not at the center of valency theory, which projects the sentence from its head, the verb. Therefore, valency theory has no problem to include the idiosyncrasies of the verbs (Faulhaber 2011), among them the specific patterns of argument marking that lead to a large number of so-called "Satzbaupläne" or "Satzmodelle" ('sentence models', Helbig and Buscha 2001).[5] The sentence models, however, are merely deductions from the observations; they do not have a theoretical status in valency theory.

In contrast to theories centered on syntactic structure and general rules (generative theories) and approaches focused on collecting and systematizing idiosyncratic facts

[4] Periphery of grammar refers to "…the distinction made by Chomsky (1981) between 'core grammar'—the deep regularities of language—and the raffish 'periphery', which includes 'phenomena that result from historical accident, dialect mixture, personal idiosyncrasies, and the like' (Chomsky & Lasnik, 1993**).** Chomsky and Lasnik advocate 'putting aside' such phenomena, which include idioms and constructions…" (Jackendoff and Pinker 2005: 220).

[5] Helbig and Buscha (2001: 522-532) identify 108 sentence models.

(valency theory), cognitive linguistics started out to investigate the patterns that emerge in the seemingly unstructured area of idiosyncratic peculiarities (Lakoff and Johnson 1980). Prepositions as highly polysemous lexical items presented themselves as the perfect area of research (Brugman 1988, Vandeloise 1990, Cuyckens 1991, Deane 1992, Dewell 1994, Tyler and Evans 2001, 2003, among others) to investigate cognitively motivated semantic networks. This investigation revealed that many senses of prepositions can be explained in terms of metaphorical meaning extensions from the basic spatial sense (Brugman 1988, Lakoff 1987, among others). Consider the examples in (1.9)

(1.9) a. Im Frühling blühen die Krokusse.
in-the spring bloom the crocuses.NOM
'The crocuses bloom in spring.'

b. Wir feiern ins neue Jahr hinein.
we.NOM celebrate into-the new year PTCL.into
'We celebrate the arrival of the new year and party until past midnight.'

The preposition *in* ('in') in (1.9) denotes a temporal relation and is therefore said to have a temporal sense derived from its basic locative sense (Evans and Tyler 2004). The prototypical locative sense of *in* describes a situation where a landmark contains or surrounds a trajectory (Evans and Tyler 2004: 159). These sentences show that time can be construed as such a landmark, i.e. a container, and therefore the matching preposition *in* is used to express the relationship of containment, in a temporal sense. This means that the metaphorical meaning extension of *in* and its use in situations like (1.9) is motivated, but at the same time this process cannot account for all non-spatial uses of prepositions (cf. 1.10).

(1.10) a. Wir freuen uns auf den Frühling.
we.NOM are-happy REFL on the spring
'We are looking forward to the spring.'

The use of the preposition *auf* in (1.10) is motivated differently when compared with the examples in (1.9). Note that there is an underlying notion of compositionality in this view of prepositional meanings: the metaphorically extended senses allow the words to be submitted under the general syntactic rules, i.e. the lexicon is organized in a motivated way, but that does not have an effect on the core of the language, the rule-based system.

However, cognitive linguistics also advances the idea of a lexico-grammatical continuum with the lexicon and the syntax being at the opposite ends of the continuum. Langacker (1987) argued for this model based on psychological plausibility. This view is integrated in Construction Grammar, a relatively new approach to the study of linguistic phenomena (e.g. Fillmore and Kay 1993, Fillmore, Kay and O'Connor 1988, Kay and Fillmore 1999, Lakoff 1987, and Goldberg 1995/2006). Integrating the principle of the lexicon-grammar continuum allows us to account for idiosyncratic information and generalizations of patterns at any level. Therefore, I consider Construction Grammar the best theoretical framework to approach verb-PP_{auf} combinations from a new perspective; the main issue this dissertation addresses is whether verb-PP_{auf} combinations show any syntactic and/or semantic regularity that can account for their seemingly idiosyncratic distribution.

Based on these considerations I aim to answer the following questions in my dissertation:

1. Is there evidence for a partially schematic argument structure construction headed by *auf* (Rostila 2007)?

Rostila (2007) suggests the existence of a partially schematic argument structure construction *auf* that provides a future meaning to a verb it fuses with by providing the

constructional semantic role 'future event'. Based on a larger amount of data, I aim to investigate systematically the validity of his proposal and suggestions.

2. Is it possible to make generalizations about the semantics of verb-PP$_{auf}$ combinations? If yes, on what level can they be made and what information do they provide?

Rostila's (2007) approach to verb-PP$_{auf}$ combinations is – although couched in Construction Grammar – a top-down approach. He developed the *auf*-construction based on theoretical considerations in parallel fashion to Goldberg's (1995) argument structure constructions, assuming beforehand that there could be such a construction and searching afterwards for data that could be applied to the model. In my second study, I will take a usage-based bottom-up approach (Barlow and Kemmer 2000) that starts at the lowest level, i.e. with the data. I will investigate frequent verb-PP$_{auf}$ combinations extracted from a large German corpus, the "IMS-DeWaC" corpus (Baroni and Kilgarriff 2006, Schmid 1994, 1995, Faaß et al. 2010, Schiehlen 2003) and provide a network analysis of selected subgroups. This analysis will reveal whether the distribution of verb-PP$_{auf}$ combinations is truly idiosyncratic or if patterns can be identified and if yes, at which level.

1.2 Overview of the Dissertation

The dissertation is structured as follows: Chapter 2 provides a detailed description of the preposition *auf* and its properties based on a number of German dictionaries and a detailed study of *auf* (Bouillon 1984). This is followed by a theory-neutral discussion of prepositional objects in German (Breindl 1989). In the second part of chapter 2 I survey the approaches to prepositions and prepositional phrases in various linguistic theories. The theories I discuss are approaches within generative linguistics (Fillmore 1968, Rauh 1993, and Steinitz 1992, 1997), in cognitive linguistics (Brugman 1988, Lakoff 1987,

Meex 2001, and Liamkina 2007), and valency theory (Heringer 1968, Eroms 1981, 1991, Domínguez-Vázquez 2005). The goal is to evaluate these approaches for their suitability to capture the distribution of verb-PP$_{auf}$ combinations.

In chapter 3 I discuss Construction Grammar, in particular Goldberg's (1995, 2006) argument structure constructions. I introduce the notation employed by Goldberg and the process of fusion of schematic constructions with individual lexical items that is responsible for new usages of verbs. Based on these theoretical prerequisites, I explain Rostila's (2007) partially schematic argument structure construction *auf*. I also provide data illustrating the limits of his construction. In the last part of chapter 3 I give an overview of Frame Semantics (Fillmore 1982, 1985), the semantic theory connected to Construction Grammar, and show why and how it is useful for my purposes.

Chapter 4 discusses the methodology and corpora used for the case studies in chapters 5 and 6. In particular, I lay out the foundations of the usage-based approach (Barlow and Kemmer 2000) and some tenets of corpus linguistics (Biber, Conrad, and Reppen 1998). In the second part I introduce the corpora and explain in detail the procedure I applied to arrive at the list of verb-PP$_{auf}$ combinations that are the data basis for the studies in chapters 5 and 6.

In chapter 5 I first develop a method for analyzing verb-PP$_{auf}$ combinations with regard to a meaning of 'futurity' and 'future event' since these are the defining criteria for Rostila's (2007) *auf*-construction. This method is applied to extract all verb-PP$_{auf}$ constructions that convey such a meaning. The extracted verb-*auf* combinations are potential instances of the abstract *auf*-construction that I will test further following a procedure adapted from Proost (2009). I first examine the base verbs of these combinations for futurity; they must not have a future meaning since in that case it would not be arrived at by fusing with the *auf*-construction. Then I test near synonyms for their

ability to fuse with the *auf* construction. Based on the results, I draw a data-supported conclusion about the partially schematic argument structure construction *auf* proposed by Rostila (2007).

In chapter 6, I use the same data set to group verb-PP$_{auf}$ combinations according to their meaning based on FrameNet, the lexical database developed on the grounds of Frame Semantics (Fillmore 1985, Fillmore and Atkins 1992). I start out describing FrameNet and the relevant frame-to-frame relations. Following the overview of FrameNet, I provide three network analyses (Langacker 1987) of groups of verb-PP$_{auf}$ combinations that are similar in meaning, i.e. the members of each group evoke the same frame. I finally combine the three partial lexical-constructional networks in one network that will allow observations about the level of generalization that is possible for these three groups of verb-PP$_{auf}$ combinations. In the conclusion of chapter 6 I provide a discussion of the significance and advantages of lexical-constructional networks and the role they could play in advancing our knowledge of the lexicon-syntax continuum.

Finally, Chapter 7 presents a summary and some proposals for future research. The conclusion emerging from this work is that an analysis of verb-PP$_{auf}$ combinations and verb-PP combinations in general cannot be based on general syntactic and/or semantic rules or abstract constructions. Instead, such analyses must start at the level of actual usage data and take into account the detailed information about each lexical unit. Only on these grounds are meaningful generalizations possible that can be accounted for and visualized in lexical-constructional networks.

Chapter 2:

Previous Research on Verb-PP$_{auf}$ Combinations

2.1 INTRODUCTION

In this chapter I discuss a number of different analyses that have investigated the meaning of prepositions and their ability to combine with particular verbs. I intend to show that while previous approaches provide some answers to these issues, there are numerous problems when it comes to accounting for a verb's ability to combine with a particular preposition like *auf* ('on') (cf. 2.1).

(2.1) a. Thomas wartet auf den Zug.
Thomas.NOM waits on the train
'Thomas is waiting for the train.'

b. Thomas sehnt sich nach/*auf seiner Freundin.
Thomas.NOM longs REFL after/*on his girlfriend.DAT
'Thomas is longing for his girlfriend.'

Chapter 2 consists of two parts. In the first part I provide a detailed description of the meaning of the German preposition *auf* ('on') by comparing seven German dictionary accounts (section 2.1.1) as well as the study by Bouillon (1984), which examines *auf* in several functions (section 2.1.2). This overview gives an account of the semantic properties of the preposition and shows the difficulties that arise when dealing with the preposition *auf* when it does not have a transparent meaning. Part two presents a thorough overview of different analyses dealing with how verbs and prepositions combine in German. I show that these approaches cannot explain or predict the selection of the distribution of such combinations.

2.2 THE SEMANTICS OF *AUF* ('ON')

In this section I summarize the various analyses of the German preposition *auf* ('on') as they appear in six German dictionaries, in one reference grammar, and in the book-length-study by Bouillon (1984). The goal is to give an account of the lexical meaning of the preposition *auf* that is as comprehensive as possible and to show the limits of the atomistic lexicographical approach to word senses for more complex linguistic constructions.

2.2.1 The Lexical Senses of the Preposition *auf*

Most of the dictionaries I analyzed explicitly distinguish between lexical senses of the preposition *auf* and uses where a lexical meaning cannot be identified.[6] 'Lexical' are the senses of the preposition when they have a transparent, i.e. lexical meaning by denoting local, temporal, modal, and causal relations in a sentence for instance. In other usage contexts, the meaning of the preposition is opaque. This is often the case for prepositions in fixed combinations, e.g. verb-PP_{auf} combinations such as *warten auf* ('to wait for') and idiomatic phrases like for instance *sich auf die Socken machen* ('getting ready to go').[7] In this section I focus on describing the lexical senses of *auf* as it is

[6] Of all the dictionaries I consulted, only Paul et al. (2002) and Wahrig-Burfeind and Wahrig (2002) do not make this distinction.

[7] This is, of course, a simplified view of the prepositional meaning. In reality, the meaning of prepositions must be described as a continuum reaching from completely transparent to completely opaque. For an overview of prepositions and prepositional phrases see Breindl (2006). However, dictionaries that rely on meaning descriptions by paraphrasing the words must make this distinction.

recorded in German dictionaries.[8] For my analysis of the semantic descriptions of *auf* ('on') I used the following lexicographic resources:[9]

1. Deutsches Wörterbuch (Paul et al. 2002)
2. Deutsches Wörterbuch (Wahrig-Burfeind and Wahrig 2002)
3. Deutsche Grammatik für Ausländer (Helbig and Buscha 2001)
4. Digitales Wörterbuch der Deutschen Sprache (DWDS)[10]
5. Duden online[11]
6. Lexikon der deutschen Präpositionen (Schröder 1986)
7. Wörterbuch Deutsch als Fremdsprache (Kempcke 2000)
8. Bouillon (1984)

I summarize the accounts for the preposition *auf* in these lexical resources based on the common subgroups they form.

2.2.1.1 Locative Senses

All dictionaries recognize the locative sense[12] of *auf* ('on') but there exist considerable differences within this category. Table 2.1 summarizes the locative sense(s).[13] "Paul", "Helbig/Buscha", "DWDS", "Duden" and "Bouillon" establish one category that comprises stative and directional uses, whereas the other dictionaries divide

[8] The dictionaries I surveyed do not state the procedures and theoretical assumptions that lead the authors to the different senses and sub-senses in their analyses of the preposition *auf*, with the exception of Schröder (1986). Since there is no generally approved or even agreed upon approach to determining the meaning of lexical units it is not surprising to find discrapencies in the different dictionaries.

[9] I do not provide information about *auf* in other functions, e.g. as prefix or adjective, since the focus of my dissertation is the prepositional use of *auf*.

[10] http://www.dwds.de/

[11] http://www.duden.de/woerterbuch

[12] It is not surprising that all sources account for the locative meaning because prepositions as a word class have developed from local adverbs (Paul et al. 2002: 98).

[13] I include frequent examples, some slightly altered, in order to allow for a better comparison across the range of analyses. The English translations of the examples are given in Appendix A.

Table 2.1: The Locative Senses of the Preposition *auf*

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
Senses of auf ('on')	**6**	**8**	**6**	**6**	**7**	**11**	**8**	**12**
locative, stative	contact *auf dem Zimmer, Bahnhof, der Hochzeit*	*auf dem Baum, blind auf beiden Augen*	contact not goal-oriented *auf dem Baum, auf der Straße, Hochzeit*	position *auf dem Baum Arbeit, Uni* direction *auf den Tisch* derived *einer Sache auf den Grund kommen* distance *auf 50 Meter*	contact, dative case *auf dem Bahnhof* direction *auf den Baum* distance *auf 50 Meter*	dative case horizontal contact *auf dem Tisch, auf dem Bahnhof*	dative case contact *auf der Straße, Bahnhof, Hochzeit*	high(er), contact *auf der 12. Etage, auf dem Bauch schlafen, auf dem Bahnhof, auf das Fenster starren*
locative, direc-tional		*auf etwas stoßen, Monat auf Monat*	goal-oriented *auf den Baum,der Straße*			acc. case *auf die Straße, Party, auf 50 Meter, auf das Zimmer*	acc. case *auf den Tisch legen, auf Reisen gehen*	
hori-zontal direction							acc. case *auf jmd. zugehen*	
quasi-locative						dative case institutionalized *auf der Konferenz*		
locative, goal of move-ment	*zielen, hören, achten auf*							
final-locative			loc, institution *auf den/m Bahnhof*					
locative, special forms						dative case temporary *auf Besuch, auf dem Zimmer, auf der Suche*		
instru-mental - locative						dative case horizontal, contact, instrument *auf der Maschine nähen*		

these into two separate senses. Other semantic features, e.g. 'horizontal' and 'contact', are important for establishing subcategories in some articles, but not in others. Some dictionaries posit additional senses of *auf* based on features like 'horizontal direction' ("DaF Kempcke") or 'locative-institution' ("Helbig/Buscha"). "Schröder" distinguishes the most locative meanings with five different senses. The picture that emerges from the analysis reveals the inconsistency of the locative senses of *auf* across the different sources. Depending on the number and kind of features that the authors isolated as definition criteria of the senses, they established more or less categories with diverging content.[14] From these findings I conclude that *auf* has (of course) a locative sense but it remains unclear how the central locative meaning is defined and how many and which subsenses exist.

2.2.1.2 Temporal Senses

The temporal sense is uniformly recognized as one sense across the sources but also with different numbers and kinds of subsenses (e.g. "point in time", "(prospective) duration", "simultaneous/successive events", "period between events"). "Wahrig" and "Schröder" do not divide the category further; "Helbig/Buscha" and "Paul" recognize two subsenses, "Duden" three, "Bouillon" and "DWDS" four and "DaF Kempcke" establishes five subsenses. Table (2.2) summarizes the temporal senses that the different sources propose and provides some examples.[15] The examination of the temporal categories and the related decontextualized examples reveal that this sense is even fuzzier

[14] Note also the different overall number of senses established by the authors of the dictionaries, ranging from six to twelve.

[15] The examples are again slightly changed in some cases to allow a better comparison. Translations of the examples in table 2.2 can be found in Appendix A.

than the locative category. It is, for instance, not obvious why *auf* in the phrases *auf Anfrage* ('on request', "Paul") should be described as temporal.

Table 2.2: The Temporal Senses of the Preposition *auf*

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
temporal	sequence *auf Anfrage, Schlag auf Schlag* causal relation *auf etwas folgen*	*auf die Minute genau*	point in time *auf der Konferenz, Hochzeit* duration *auf längere Zeit*	duration *auf 4 Jahre* sequence *auf etwas folgen* point in time *auf Weihnach-ten* idiomatic *etwas auf Anhieb schaffen, auf die Minute genau*	duration *auf 4 Jahre* point in time (regional) *auf Ostern* idiomatic *auf einmal, die Nacht auf Freitag, Schlag auf Schlag*	*auf 4 Jahre, auf einmal*	simultan. *auf der Wande-rung* duration *auf 4 Tage* period between 2 events *von Montag auf Dienstag* successive events *auf etwas folgen* phrases *auf Wieder-sehen*	prospective duration *auf 4 Tage* prospective point in time *auf morgen verlegen* prospective time specificat. *auf 4 Uhr gehen, von Montag auf Dienstag* simultan. +organized human positive activity *auf der Konferenz, Hochzeit*

2.2.1.3 Causal, Modal, and Final Senses

The modal meaning of *auf* seems less problematic for a semantic analysis. Except for "DaF Kempcke" this is for all dictionaries a uniform category, probably due to the narrow, well-defined meaning of 'modal'.[16] A separate causal sense of *auf* is also recognized by most dictionaries, except for "Wahrig" and "Paul", in contrast to the final sense that half of the sources do not recognize as a separate meaning for *auf*. However, if

[16] Glück (2000: 445) defines 'modal' as denoting manner and answering the questions "how?" And "how much?"

we look at the examples provided for these senses, it is unclear how much the preposition *auf* can be said to contribute the causal or final meaning. In the cases of *auf Wunsch* ('on demand', 'by request', causal sense) and *auf Abriss verkaufen* ('to sell with the purpose of demolishing', final sense), for instance, it seems more likely that the preposition-noun combination is conventionalized, in which case a distinct meaning of the preposition could not be isolated. The causal, modal, and final senses as they are recorded in the dictionaries are illustrated in table (2.3).[17]

Table 2.3: The Causal, Modal, and Final Senses of the Preposition *auf*

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
modal	*auf diese Weise, auf Deutsch*	*aufs Beste, auf Deutsch, auf Raten kaufen*	*auf die Minute genau, Schlag auf Schlag, auf Deutsch, auf einmal*	*auf Staats-kosten leben, aufs Beste, auf den Tod krank*	*auf Deutsch*	*auf bestimmte Weise, auf Gedeih und Verderb, auf Staatsko-sten bauen, auf die Minute genau, auf Deutsch*	modality *auf Detusch* measure-ment *auf die Minute genau, 3 Tropfen auf 1 Glas*	*auf diese Weise, auf Deutsch*
causal			*auf Anregung, Rat von X*	conse-quence, result *auf Bestellung, auf sein Zeichen*	*antworten auf, auf Wunsch*	*auf Wunsch, Befehl*	accusative case *auf Befehl*	+human activity allowing reaction *auf Anregung von X*
final				purpose, goal *auf Abbruch verkaufen, etwas auf etwas überprüfen*	goal, purpose, wish *auf Hasen jagen, auf Zeit spielen, auf sein Wohl*	*auf Jagd, Montage gehen, auf Urlaub,auf ein Bier, auf sein Wohl*	purpose, goal *auf sein Wohl*	

[17] Translations of the examples are provided in Appendix A.

2.2.1.4 Other Senses

All surveyed dictionaries mention senses of the preposition *auf* that cannot be assigned to one of the other categories (see table 2.4). Depending on the examples that

Table 2.4: Other Senses of the Preposition *auf*

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
measure/ distribu-tion			*3 Tropfen auf 1 Glas*		*3 Tropfen auf 1 Glas*	*3 Tropfen auf 1 Glas*		point on scale *Wecker auf 4 Uhr stellen* proportion *3 Tropfen auf 1 Glas*
proxy						*Tickets auf den Namen 'Müller' reservieren*		
special func-tions				measure *3 Tropfen auf 1 Glas bis auf* subcat frames V, N, A + auf *achten, vertrauen, hören auf*	subcat frames V, N, A + auf *sich freuen auf, beruhen auf*			
idio-matic phrases		*auf seinen Rat hin, von klein auf*						
not labeled		*achten, hoffen, warten, auf Besuch, Arbeit, die Uni gehen*					*V, N, A + auf warten stolz sein, Recht auf*	
not-sub-stitutable P_{auf}:								7 groups with redun-dant mean-ing*

* 1. foundation: *auf etwas basieren*
2. future: *auf jemanden/etwas stoßen*
3. final point of direction: *auf jemanden/etwas zeigen*
4. final point of transition: *auf etwas überweisen*
5. goal of cognitive movement: *auf jemanden schimpfen*
6. result: *auf jemanden/etwas reagieren*
7. measurement: *auf etwas verlängern*

the authors focus on, the labels of these categories differ. The phrases containing *auf* within a ratio, e.g. *drei Tropfen Medizin auf ein Glas Wasser* ('three drops of medicine per/on one glass of water') gave rise to the measure/distribution sense that only four of the eight sources list. The other categories are not semantic categories, but rather labels for uses of *auf* where the dictionary could not identify a lexical meaning, e.g. idiomatic phrases ("Wahrig") and special functions ("DWDS", "Duden"). Note that verb-PP_{auf} combinations are mentioned within these groups ("DWDS", "Duden").

2.2.1.5 Summary

When we look at the proposed senses and their internal structure it becomes apparent that there is not a generally accepted inventory of senses for the preposition *auf*. The number, kind, and internal complexity of the senses seem to depend on the respective lexicographer and the data and methods used for determining the senses which are mostly not communicated in the dictionaries. Differences can also be seen in interpreting the same prepositional phrases headed by *auf*. The fewest problems occur in mapping prepositional uses to senses in the locative, and the modal categories. But we find disagreeing accounts even in these more or less clear-cut meaning groups, e.g. *auf der Hochzeit* ('at the wedding') is interpreted either as locative ("Paul", "DaF Kempcke"), temporal ("Bouillon") or as both ("Helbig/Buscha"). Phrases that involve nouns denoting institutions or events, e.g. *Arbeit* ('work place') or *Konferenz* ('conference') are mapped differently to meaning categories: they have a local meaning according to "DWDS" (*Arbeit*), a quasi-local meaning according to "Schröder" (*Konferenz*), they are mentioned but not labeled in "Wahrig", and "Bouillon" assigns a temporal meaning (*Konferenz*).

Especially noteworthy in this context is that the dictionaries have particularly big problems with attributing senses to *auf* in phrases where the preposition is governed by a verb (V), a noun (N), or an adjective (A), i.e. the verb-PP_{auf}, combinations that are the subject of this dissertation.[18]

2.2.2. Bouillon (1984)

I now turn to Bouillon's detailed study of the German preposition *auf*. Bouillon's (1984) study is divided into three parts.[19] After a theoretical introduction reflecting the morphological and syntactic features of prepositions in general, Bouillon focuses on the semantic description of the German word *auf*, including *auf-* as a prefix. I only refer here to his analyses of the senses of *auf* as a preposition.

Bouillon (1984) establishes two main semantic groups of the preposition *auf* based on the criterion of substitutability, i.e. whether or not *auf* can be replaced by another preposition. The first group comprises the senses of the preposition *auf* in usage contexts where it can be substituted with another preposition to express a different relation to the following noun phrase. The preposition *auf* in this group has a lexical meaning and is most often the head of a prepositional phrase with adverbial meaning, according to Bouillon (1984). I already described the prepositional senses of this group in the previous section. The second group contains the *auf* in phrases when it cannot be

[18] "Helbig/Buscha" and "Schröder" even exclude these uses from the outset as being devoid of any lexical meaning.

[19] Bouillon bases his analysis on the framework of the multi-layered grammar by Lerot (1973):"Die vielschichtige Grammatik hat eine ordnende Aufgabe. Ihr Ziel ist es, die beobachteten Sprachfakten auf verschiedenen Abstaktionsebenen anzusiedeln. Auf diese Weise können die Einsichten früherer Forscher integriert werden, je nach dem Abstraktionsgrad, der nötig ist, um zu Generalisierungen zu gelangen." ('The multi-layered grammar has an organizing function. It is its goal to compile observed linguistic facts on different levels of abstraction. Using this model, previous findings of linguists can be integrated depending on the degree of abstraction necessary for generalizations.') (Bouillon 1984: II).

substituted by another preposition. *Auf* in this group is selected by a verb, noun or adjective and heads a prepositional phrase that functions most often as prepositional object or attribute.

However, Bouillon (1984) argues that clusters of meanings of *auf* can be extracted by grouping the governing elements into semantically similar classes.[20] The semantic similarity of these classes is based on one semantic feature which is responsible for the selection of the preposition *auf*; the preposition merely repeats or specifies this feature, and, therefore, has a redundant meaning with regard to the governing element.

Bouillon posits seven semantic groups for the preposition *auf* in the non-substitutable position. The first group of governing elements comprises the common feature 'expression of a foundation' and *auf* can govern the dative case or the accusative case. Examples are *basieren auf* ('to be based upon'), *beharren auf* ('to insist on'), *beruhen auf* ('to rest on'), *auf jemanden bauen* ('to rely on someone'), and s*ich auf ein Gesetz berufen* ('to refer to a law'), among others; more examples are given in Bouillon (1984: 94f.). The common semantic feature 'expression of a basis' is supposed to be intuitively understandable to the reader of the verbs, nouns, and adjectives compiled in this group. In these cases *auf* heads the phrase that expresses the base or the foundation of the feeling or activity denoted by the verb (Bouillon 1984: 95). This interpretation is comprehensible for some of the examples, e.g. *basieren auf* ('to be based upon'), but this general meaning cannot be assigned to all examples. Consider the following sentences:

(2.2) a. Er beharrte auf seiner Forderung.
He.NOM insisted on his request.ACC
'He insisted on his request.'

[20] The work of categorizing the governing verbs, nouns, and adjectives according to similar features was carried out by Bouillon in an unpublished term paper preceding his doctoral thesis (Bouillon 1984: 91). This term paper was not available to me.

a'. Er änderte seine Forderung nicht.
He.NOM changed his request.ACC NEG
'He didn't modify his request.'
b. Er schwört auf dieses Heilmittel.
He.NOM swears on this medicament.ACC
'He swears by this medicament.' (Bouillon 1984: 94)
b'. Er ist überzeugt, dass dieses Heilmittel
He.NOM is convinced that this medicament.NOM
ihm sehr gut hilft.
him. DAT very well helps
'He is convinced that this medicament helps him very well.'

The 'request' (*Forderung*) in (2.2a) cannot felicitously be said to be the basis or the foundation for 'his insisting'; it is also not the cause or the reason for the action denoted by the verb *beharren* ('to insist'), not even in a metaphorical sense. Looking at the paraphrase of the sentence in (2.2a') shows that the 'request' is the theme about which the subject *er* ('he') is communicating. The foundation or basis for the subject's attitude of insisting and not changing his mind is not mentioned in these sentences. Therefore, the meanings of the two verbs *basieren auf* ('to be based on') and *beharren auf* ('to insist on') should not be grouped together under the label of 'expression of a foundation'. Then, according to Bouillon's theory, the preposition *auf* cannot have the same meaning in the context of the verbs *basieren auf* ('to be based on') and *beharren auf* ('to insist on') because these verbs do not belong to the same semantic group since they do not share the unifying feature of Bouillon's group. This discussion shows that the procedure Bouillon applies to determine prepositional senses based on grouping verbs with regard to one similar semantic feature is problematic and does not yield results with solid explanatory power.

(2.2b) is problematic for the same reasons. The prepositional phrase *auf dieses Heilmittel* in (2.2b) cannot be described as the basis or cause of the situation denoted by the verb *schwören*. The German phrase *auf etwas schwören* is a figurative phrase like its

English equivalent 'to swear by [chicken noodle soup for colds]' and means 'to have extreme confidence in something'. The situation expressed in (2.2b) can be paraphrased as in (2.2b'), which reveals that the subject communicates an attitude towards a theme, i.e. 'the medicine'. Based on our world knowledge and experiences about situations of being sick and taking medicine we can infer the basis or foundation for the subject's attitude, in contrast to the situation denoted in (2.2a). The subject *er* ('he') has probably had a positive experience with this particular medicine but this experience is not denoted by the word 'medicine'.

The difference in the meanings of *basieren* ('to be based upon'), *beharren auf* ('to insist on'), *beruhen* ('to rest on'), and *schwören* ('to swear') is furthermore visible in the semantic constraints of the subject: Whereas the subject of *basieren* must be inanimate, both subjects of *beharren* and *schwören* must be sentient entities. These remarks show that Bouillon's procedure for categorizing verbs (as well as adjectives and nouns) based on one intuitively extracted semantic feature does not yield clear results. It can, therefore, not be used to classify the meanings of the preposition *auf* as a grammatical marker, since these meanings are based on the intuitively extracted common semantic feature. Below I provide a summary of the other six semantic groups proposed by Bouillon. I refrain, however, from a detailed analysis of his examples. I provide an in-depth study of selected verbs that occur in verb-PP_{auf} combinations in Chapters 5 and 6.

The second semantic group is labeled 'expression of a future meaning'. Examples in this group are *stoßen auf* ('to encounter, discover something'), *auf Rache brennen* ('to die to take revenge'), *sich freuen auf* ('to look forward to'), *hoffen auf* ('to hope for'), *sparen auf* ('to save money for'), *auf ihr Wohl trinken* ('to drink to her health'), *sich vorbereiten auf* ('to prepare for'), and *verzichten auf* ('to abstain from'). According to Bouillon (1984: 98), all these verbs express a 'certain prospective meaning'. This group

of verbs is very heterogeneous in that it comprises different kinds of verbs: cognition verbs that express attitudes of the subject (*hoffen auf* ('to hope for'), *sich freuen auf* ('to look forward to'), as well as the idiomatic phrase *auf Rache brennen* ('to die to take revenge') where the noun within the prepositional phrase is restricted to a narrow range of words), goal-oriented activity verbs (*sparen auf* ('to save money for something'), *sich vorbereiten auf* ('to prepare for something')), and some verbs which do not have a future-oriented meaning such as achievement verbs like *stoßen auf* ('to encounter, discover something'), which denotes one point in time and cannot express a time span. Next, consider the idiomatic phrase *auf ihr Wohl trinken* ('to drink to somebody's health'), in which the prepositional phrase is not restricted to future events, as can be seen in (2.3a-b).

(2.3) a. Wir trinken auf Verlierer.
We.NOM drink on losers.ACC
'Here is to losers.'
(Marteria, Yasha & Miss Platnum: Lila Wolken[21])

b. Wir trinken auf den gestrigen Sieg.
We.NOM drink on yesterday's victory.ACC
'Here is to yesterday's victory.'

The examples in (2.3) show that the idiomatic phrase *auf jemanden/etwas trinken* ('to drink to someone/something') does not entail a future-orientation of the verb or the prepositional phrase. Instead the verb denotes a celebratory event with the prepositional phrase being the reason or cause of the celebration. The idiomatic phrase can also be a performative speech act in a social ritual that is devoid of any propositional meaning. This discussion shows again how problematic the characterization / classification of verb classes can be, based on one semantic feature.

21 http://www.songtexte.com/songtext/marteria-miss-platnum-and-yasha/lila-wolken-bb845d6.html (02/22/2013).

The third semantic group of Bouillon's non-substitutable preposition *auf* comprises verbs that express "the final point of a direction" (Bouillon 1984: 101). Examples of verbs in this group are *zeigen auf* ('to point at'), *anspielen auf etwas* ('to hint at something'), and *zurückführen auf* ('to lead back', 'to ascribe something to something/someone'). This is again a heterogeneous group that would need further investigation. The same remark applies to the three following groups that I cite here without further comments.

The verbs of the fourth group denote "the final point of a transition", according to Bouillon (1984: 103). This sense is repeated in the redundant meaning of the preposition. Examples are *Geld auf ein Konto überweisen* ('to transfer money to an account'), *übertragen auf* ('to transmit/transfer to'), and *auf eine seltsame Idee verfallen* ('to jump on a strange idea'). Members of the fifth group express the "goal of a cognitive or emotional movement" (Bouillon 1984: 104), e.g. *schimpfen auf* ('to rail against someone/something'), and *wütend sein auf* ('to be angry about'). Bouillon's (1984: 105f.) sixth semantic group is the "expression of a result", e.g. *auf etwas reagieren* ('to react/respond to something'), *sich auf etwas einlassen* ('to engage in something', 'to get into something'), and *auf etwas eingehen* ('to go into something').[22] Group seven of Bouillon's (1984: 106f.) classification expresses "measurement", e.g. *den Vertrag auf fünf Jahre verlängern* ('to extend the contract to five years'), *sich beschränken auf* ('to limit oneself to something'), and *auf Freistoß entscheiden* ('to award a free kick').

Bouillon's attempt to account for the meaning of *auf* as a grammatical marker by establishing seven subgroups for this category based on perceived semantic similarities of the governing words is based on intuition. Bouillon extracted one semantic feature which

[22] Note that the prepositional complement of 'to respond to' is the cause of the communicative activity and as such temporally located before the event rather than being the result.

he then interprets as the redundant meaning of the preposition for the usages in these groups. This procedure leads to severe problems when we take a closer look at the group members. First, the intuitive procedure of choosing one semantic feature of groups of verbs is not reproducible on the basis of the group members Bouillon lists; it is not clear, how Bouillon determined the semantic features that function as the defining element for the semantic clusters. Furthermore, isolating one supposedly common feature is not sufficient to describe the complex semantics of the whole group of verbs, adjectives, and nouns. Therefore, Bouillon's (1984) analysis of the senses of the grammatical preposition *auf* cannot be used to adequately describe the distribution of verb-preposition combinations with *auf* in German.

2.2.3 Summary

The analysis of the semantic description of *auf* in the dictionaries shows that no two descriptions of *auf* ('on') are identical. All accounts exhibit differences in the number and types of senses or usages they recognize for the preposition and the internal structure of the semantic categories. Furthermore, identical or similar examples are assigned to different categories. Based on various examples, I have shown that there are difficulties with assigning well-defined senses to the preposition in its different linguistic contexts. The more or less concrete adverbial senses are difficult enough to describe and to identify in concrete examples, and it is even more complicated to deal with the abstract, grammatical senses of *auf* in governed PPs. I conclude from the previous investigation that it is not useful to apply the model of feature bundles to the description of the meaning of *auf* in verb-preposition combinations. I now turn to an overview of theoretical approaches that deal with prepositions.

2.3 Theoretical Approaches to Prepositions and Prepositional Phrases

2.3.1 Breindl (1989): Overview of Prepositional Objects in German

Breindl (1989) aims to provide a theory-neutral account of prepositional objects in German, and to determine the significance of prepositional objects within the system of verb-dependent constituents by providing a survey about their semantic and syntactic characteristics that is as comprehensive as possible (Breindl 1989: 4). Although the author does not aim to provide a qualitative or quantitative study in the sense of current corpus linguistics, she supports her investigation with data from different sources: newspapers, magazines, modern fiction and journals as well as some data sets from oral corpora (Breindl 1989: 6). She also uses self-constructed sentences and judgments of German native speakers, especially in the third and fourth chapters of the book.

Breindl points out that the prepositional objects can be realized in various forms: "Die syntaktische Funktion PO [Präpositionalobjekt] kann kategorial als PP [Präpositionalphrase] [2.4a.], Pro-PP [2.4b.] und als satzförmige Struktur [2.4c.] realisiert sein" (Breindl 1989: 1).[23] Examples for each form are given in (2.4), corresponding to the numeration in the brackets in the quote above.

[23] "The syntactic function "prepositional object" can be realized as a prepositional phrase, a placeholder and as a sentence-like structure." (Breindl 1989: 1) The quote continues: "Als übergeordnete Prädikate fungieren Verben (…), Prädikatskomplexe aus Kopula und Adjektive (...), Nomina (...) oder komplexe Prädikate mit einem nominalen Bestandteil (...)." ('Words that function as super ordinated predicates are verbs (…), complex predicates consisting of a copula verb and an adjective (…), nouns or complex predicates with a nominal component (…).') (Breindl 1989: 1). This is a wide definition of prepositional objects. Today, prepositional objects are only those PPs that are governed by verbs. PPs governed by nouns are termed prepositional attributes (Breindl 2006: 937; Glück 2000: 545; Hölzner 2007; Schierholz 1997); PPs governed by adjectives are called "Adjektivdependentien" ('adjective dependents', Breindl 2006: 937); PPs in complex or idiomatic phrases are not specifically named.

(2.4) a. Ich fürchte mich weder vor Hölle noch
I.NOM fear REFL neither from hell nor
Teufel. (Breindl 1989: 8)
devil
'I am neither afraid of hell nor the devil.'

b. Aber darüber weiß ich so gut wie
But there.ADV-r-over.PREP know I .NOM as good as
nichts. (Breindl 1989: 8)
nothing
'But about this, I know very little.'

c. Hans beklagte sich (darüber),
Hans. NOM complained REFL (there.ADV-r-over.PREP)
dass die Bayern so schlecht spielen.
that the Bavarians. NOM so badly play
'Hans complained that Bayern-Munich plays so badly.
(Breindl 1989: 208)

Breindl first (1989: 8-81) examines features of prepositional objects and the verbs subcategorizing for them. She does not focus on particular prepositions or a specific group of verbs. Instead, Breindl aims to characterize prepositional objects as a complete group in contrast to adverbials that are realized as prepositional phrases. First, she surveys the literature within valency theory (e.g. Eroms 1981, Helbig 1982, Jacobs 1986/1996) and concludes that the tests and procedures developed for defining and delimiting prepositional objects are not sufficient; they cannot be used to reliably distinguish prepositional objects from other prepositional phrases like sentence adverbials:

> Hauptproblem bei der Beschreibung des Gegenstands bleibt damit die Abgrenzung der POe von den adverbialen PPen ... Nun liegen aber dem Valenzbegriff selbst mittlerweile völlig uneinheitliche Konzeptionen zugrunde (...), die sich allenfalls noch in der Vorstellung einer besonderen Art der Bindung eines untergeordneten Ausdrucks an einen ihm unmittelbar übergeordneten Ausdruck zur Deckung bringen lassen ... Wenig Konsens herrscht aber darin, was nun genau das Spezifikum dieser Bindung ist ... (Breindl 1989: 14f.).[24]

[24] "The main problem in describing the subject remains the separation of the prepositional objects from the adverbial prepositional phrases. … However, there are in the meantime so many different concepts of valency which converge merely in the idea of a special kind of binding between a subordinated phrase and

In the next sections I review Breindl's assertions regarding verb-PP_{auf} combinations as these pertain directly to my dissertation. Breindl (1989: 23) claims that many prepositional objects with the preposition *auf* are grammatically obligatory and cannot be omitted:

> Die übergeordneten Verben haben eine gemeinsame Bedeutungskomponente "Zielgerichtetheit": *hinweisen auf*, *verweisen auf*, *hindeuten auf*, *abzielen auf, sich beziehen auf* etc. Der Bedeutung nach sind sie sozusagen transitive PO[Präpositionalobjekt]-Verben. Da PO-Verben aber nicht die Diathesenkonstrastierung zulassen, kann das PO [Präpositionalobjekt] bei diesen Verben nicht wie ein Akkusativobjekt weggelassen werden (Breindl 1989: 23).[25]

First, the meaning description based on one feature 'goal orientation' is too sparse to define the class of verbs to which Breindl refers. There are other verbs that combine with the preposition *auf*, e.g. *sich konzentrieren auf* ('to concentrate on') or *sich vorbereiten auf* ('to prepare for') and that share the meaning component of 'goal orientation' and could be subsumed under Breindl's category. Both of the above verbs subcategorize for a prepositional object headed by *auf* according to the E-VALBU, the electronic valency dictionary published by the Institut für Deutsche Sprache (IDS), Mannheim (Institute for the German language, Mannheim). These verbs, however, can occur without the prepositional phrase in grammatical sentences with similar meanings, as in the following examples.

(2.5) a. Er konzentriert sich auf die Arbeit.
He.NOM concentrates REFL on the work.ACC
'He concentrates on the work.'

---

the governing constituent. There is, however, little agreement about the specific nature of this binding relation, …." (Breindl 1989: 14f.)

[25] "The governing verbs have a common meaning component 'goal orientation': *hinweisen auf* ('to point to'), *verweisen auf* ('to refer to'), *hindeuten auf* ('to indicate'), *abzielen auf* ('to be aimed at'), *sich beziehen auf* ('to refer to'), etc. With regard to their meaning, these verbs are so-to-speak transitive prepositional-object verbs. However, the prepositional object of these verbs cannot be omitted like an accusative (direct) object because prepositional-object verbs do not allow for contrasting diatheses" (Breindl 1989: 23).

b. Er konzentriert sich.
He.NOM concentrates REFL
'He is concentrating.'

(2.6) a. Er bereitet sich auf den Test vor.
He.NOM prepares REFL on the test.ACC PTCL
'He prepares himself for the test.'

b. Er bereitet sich vor.
He.NOM prepares REFL PTCL
'He prepares himself.'

(2.5) and (2.6) show that the goal-oriented prepositional phrase can be omitted in combination with the verbs. Breindl (1989: 23) also mentions the test of contrasting diatheses ("Diathesenkonstrastierung"), based on a test by Pasch (1977), illustrated in (2.7).

(2.7) a. Sie isst nicht, sondern sie trinkt.
She eats not instead she drinks
'She doesn't eat instead she drinks.' (Breindl 1989: 21)

b. Sie sieht nicht, sondern sie hört (nur).
She sees not instead she hears (only)
'She doesn't see, she (only) hears.' (Breindl 1989: 21)

c. Sie wohnt nicht, sondern sie haust.
She lives not instead she lives under bad conditions
'She doesn't live well, instead she lives under bad housing conditions.' (Breindl 1989: 22)

Breindl (1989: 22) argues that the cited verbs with *auf* cannot occur without the prepositional phrase because they cannot felicitously be used in contexts of contrasting diatheses like (2.7). Now compare (2.8)

(2.8) a. Sie verweist nicht, sondern sie zitiert.
She refers not instead she cites.
'She doesn't refer (to sources) instead she cites (them).'

b. Er bereitet sich nicht vor, er rüstet sich.
He.NOM prepares REFL not PTCL he.NOM arms REFL
'He doesn't prepare himself, he arms himself.'

The examples in (2.8) show that such contexts can be construed for at least one verb of Breindl's category and some other goal-oriented verbs. Besides, Breindl does not

explain why there should be a causal relation between the diathesis test and the possibility to omit the prepositional phrase. While these observations do support Breindl's skepticism towards the tests for categorizing post-verbal arguments as obligatory or non-obligatory elements within valency theory, they also suggest that Breindl's top-down approach is not sufficient to account for the full lexical meaning and linguistic behavior of verbs that subcategorize for a prepositional phrase headed by *auf*.

Furthermore, it is not clear what 'transitive' means in the context of 'so to speak transitive prepositional object verbs' (Breindl 1989: 23). Breindl could be refering to the Latin translation of 'transitive', i.e. "zielend" ('aiming') (Glück 2000: 745). In this case, the characterization refers again to the meaning component "goal orientation". But "transitive" is also a linguistic term referring to the syntactic structure of verbs that require a direct object marked by accusative case in German (Glück 2000: 745). The verbs in Breindl's category, however, are intransitive verbs that do not allow direct objects. Further explanation would be needed to clarify her statement.

In connection with her discussion of semantic roles and the roles these constructs can play in determining the status of prepositional phrases within the sentence, Breindl (1989: 58f.) also establishes a subclass of verbs that govern the preposition *auf*:

> *abzielen* ('to aim at'), *aussein* ('to aim at'), *es anlegen* ('to aim at'), *brennen* ('to be dying to verb sth.), *Bock haben* ('to fancy sth.'), *sich freuen* ('to look forward to'), *gespannt sein* ('to be curious'), *hinauslaufen* ('to boil down to'), *hoffen* ('to hope for'), *Hunger haben* ('to be hungry for', 'to have a craving for'), *lauern* ('to lurk'), *Lust haben* ('to go for sth.'), *neugierig sein* ('to be curious'), *zurückkommen auf* ('to come back to')

According to Breindl, the PPs of these verbs encode the 'goal of energy', but not the entities that receive an impact or change by the 'source of energy'. The semantic role 'goal' is also reflected in the encoding by the directional prepositions *nach* ('to') and

auf (‘on’) with accusative case. Breindl furthermore defines the meaning of the entities denoted by the PP as potentially affected in the future, and the verbs in this subclass as activity verbs, perception verbs and cognition verbs with an aspectual component.

The semantic descriptions of the verbs in this group and the prepositional phrases are vague and do not hold up to scrutiny. For example, Breindl does not indicate whether the group of verbs she lists contains all the verbs of German that belong into that group. If this is a complete list, then an explanation is needed on what grounds verbs with similar meanings, e.g. *warten auf* (‘to wait for’) and *zurückführen auf* (‘to attribute something to someone/something’) are excluded. Breindl’s list is also not consistent. Not only does it contain adjectives, e.g. *neugierig* (‘curious’) and nouns, e.g. *Hunger* (‘hunger’, ‘appetite’) that govern the prepositional phrase; but also the idiomatic expression *Bock haben auf* (‘to fancy something’, ‘to be up for something’) that needs to be analyzed as a unit. Furthermore, it is not clear whether the relational feature that defines the verb class is “goal orientation” (‘Zielgerichtetheit’), “future orientation” (‘Zukunftsgerichtetheit’), or a combination of both, and how this feature/these features can be identified. Consider (2.9) for an illustration of the problem.

(2.9) Ich komme auf den gestrigen / *morgigen
I.NOM come on the yesterday’s / *tomorrow’s
Vortrag zurück.
talk.ACC back
‘I refer/get back to the talk yesterday /*tomorrow.’

The verb *zurückkommen auf* (‘to get back/refer to something’) is derived from a directional motion verb in German, *zurückkommen* (‘to come back’, ‘to return’), that can be combined with a prepositional phrase headed by different prepositions with lexical meaning. The choice of the preposition in these cases is determined by the local relations in the extralinguistic reality and the noun within the prepositional phrase, cf. (2.10).

(2.10) a. Ich komme auf den Berg zurück.
I.NOM come on the mountain.ACC back
'I return to the mountain.'

b. Ich komme nach Leipzig zurück.
I.NOM come to Leipzig.ACC back
'I return to Leipzig.'

c. Ich komme in die Stadt zurück.
I.NOM come in the city.ACC back
'I return to the city.'

The prepositional phrases in (2.10a.-2.10c) are interpreted as the physical goal of the moving subject but at the same time, the verb meaning is also indicated morphologically, specifically the prefix *zurück* ('back'), that the location denoted by the prepositional phrase is also the source of movement: one can only return to one place when one has been there before. This meaning component is not necessarily present anymore in the derived verbal meaning 'to refer to' with the subcategorized, fixed preposition *auf* ('on'): a subject can refer to something that has its origin outside that same subject. In addition, the prepositional phrase does not denote a physical entity in the derived meaning. It is not clear whether the change of the verbal meaning also changes the semantic role of the prepositional phrase. I argue, however, that the label 'goal' does not describe the semantics of the prepositional phrase in sufficient detail because it does not capture the highlighted meaning differences. Moreover, the example in (2.9) suggests that the feature "future orientation" is not valid for all verbs in Breindl's group. The prepositional phrase headed by the verb *zurückkommen* ('to refer') expresses an already existing entity. Therefore, it can only be felicitously attributed with temporal adverbs indicating the past, but not the future.

Another issue is Breindl's generalization that the prepositional phrases that combine with the verbs in her list encode the "goal of energy", but not the entities that receive an impact or a change of state from the "energy source" (Breindl 1989: 59). On

the previous page, Breindl discusses the example of *einschlagen auf* ('to batter on someone/something') provided here as (2.11).

(2.11) *Der Herr schlägt erbittert auf
The man.NOM batters grimly on
seinen Hund ein, aber er trifft ihn nicht.
his dog.ACC ptcl but he meets him not
'*The man grimly batters his dog but he doesn't hit him.'

The verb *einschlagen auf* ('to batter someone', 'to lash out at someone') can be described as a goal-oriented action with the PP_{auf} denoting the goal of the hitting action. As such, the prepositional phrase encodes the entity that experiences at least an impact and possibly also a change through the "energy source", i.e. the subject *Mann* ('man') of the sentence. This is not consistent with Breindl's (1989: 59) claim, which leads me to conclude that the grouping of verbs as well as the features selected to define the meanings of the verbs and the prepositional phrase are too vague or inaccurate.

In the second chapter of her monograph, Breindl discusses several syntactic tests such as placing the prepositional phrase in various different positions of the sentence, passivation, and modification, among others. As in chapter 1, she examines the procedures introduced previously in the linguistic literature with regard to their suitability to distinguish prepositional objects and sentence adverbials, this time based on syntactic behavior of the prepositional phrases. Breindl's analysis does not result in the uncovering of syntactic patterns specific to neither a verb group nor a preposition. Instead, she determines that prepositional objects and adverbial prepositional phrases do not exhibit different characteristics regarding their reaction to syntactic tests: "In keinem der untersuchten Teilbereiche zeigen PPen ein syntaktisches Verhalten, bei dem POe und adverbiale PPen komplementär distribuiert wären" (Breindl 1989: 146).[26]

[26] "In none of the subareas studied do prepositional phrases display a syntactic behavior according to which prepositional objects and adverbial PPs show a complementary distribution" (Breindl 1989: 146).

This problem will become apparent again when I survey the valency theory approaches to verb-preposition combinations in Chapter 2.2.4. I claim, however, that the previous discussion of Breindl (1989) shows that establishing general criteria for defining a class of prepositional objects does not lead to an accurate description and understanding of specific verb-preposition combinations. Newer research about the organization of the mental lexicon and the emergence of grammar (cf. Langacker 2000, Bybee 2013)[27] suggests that the notion of prepositional objects as a clear-cut category needs to be revised.

Furthermore, an answer to the question of valence relations and their definitions does not help answer my research question of why certain verbs combine with the preposition *auf* and is, therefore beyond the scope of this dissertation. In my case studies, I take a pragmatic approach to selecting relevant verb-preposition combinations. I base my selection on dictionaries, i.e. the E-VALBU and the DWDS; the procedure is explained in further detail in Chapter 4.

Breindl (1989) provides an overview of general semantic and syntactic characteristics of prepositional phrases that function as objects. Her analyses show that the category 'prepositional object' comprises many different structures and lexical items that cannot be captured and described in sufficient detail by a one-fits-all definition of the category. Breindl presents a wealth of examples with details about different verb groups and the prepositions are possible grammatical markers of the object relation in German.

[27] "It is recognized that languages are constantly changing, and this change is gradual and takes place as language is used. … As change is gradual, the categories and units of language are variable and they form gradient rather than strictly bounded categories. Thus, linguistic structure is viewed as emergent – governed by certain regular processes, but always changing as it is re-created in the individual and in specific usage situations (…). Thus, rather than a fixed, static set of representations, language is viewed as being affected by experience in an ongoing way even in adults. It also follows, that we should not expect linguistic constructs such as segment, syllable, morpheme, word, or construction to have strict definitions, nor do we expect all the manifestations of these constructs in languages to exhibit exactly the same behavior (…)" (Bybee 2013: 50).

She does, however, not provide in-depth analyses of any particular verb-preposition combination; that is not the focus of her monograph. Breindl (1989) uses a structural top-down approach to her subject: she chooses theoretical concepts and furnishes her argumentation with data, thus providing anecdotal evidence for some linguistic instances of verb-PP combinations. I have shown above that her analysis does not yield satisfactory results when it comes to accounting systematically for verb-PP_{auf} combinations. I therefore pursue a bottom-up approach starting with the linguistic data; details about my methodology and data sources are given in Chapter 4.

2.3.2 Generative Approaches to Prepositional Phrases

I now turn to a review of the status of verb-preposition combinations within different linguistic frameworks that focus on finding regular linking procedures between argument markers and argument meaning (cf. Glück 2000: 331-334 for a short overview). I begin with an introduction to argument structure and prepositional argument marking in generative theories.

Generative grammar aims to determine general principles that account for, produce, and restrict linguistic structures in any particular language, as well as universally across all human languages (Trask 2007: 97f.). Most research dealing with prepositions devoid of a clearly lexical meaning in the analyzed context focus on prepositions in English. Therefore, I start with a discussion of the research on PPs in English before extending the results to German and discussing German-related work.

One of the seminal works within generative linguistics dealing with prepositions as grammatical markers is Fillmore (1968). Although Fillmore's position on the subject has changed by now (cf. Fillmore and Baker 2010: 326), this work sparked off a long line

of research about prepositions and prepositional phrases and initiated the development of Frame Semantics and other approaches to semantic roles. Rooted in generative grammar in the Chomskyan tradition (Bach 1965, Chomsky 1965), Fillmore (1968) suggests that all noun phrases of a sentence are assigned a general conceptual meaning at deep structure – as opposed to the surface structure of language, a basic distinction in generative grammar – that is defined by their relation to the predicate of the sentence. Fillmore (1968: 32) calls these relationships "underlying cases" nowadays known as semantic roles or theta-roles (Trask 2007: 251f.). He proposes the following "set of universal, presumably innate concepts which identify certain types of judgments human beings are capable of making about the events that are going on around them, judgments about such matters as who did it, who it happened to, and what got changed" (Fillmore 1968: 24f.): Agentive, Instrumental, Dative, Factitive, Locative, Objective. He also recognizes the need for additional cases. According to Fillmore (1968: 15), these deep-structure cases are marked by prepositions in English,[28] which may be deleted during transformational procedures that lead to the actual surface structure of a sentence. The prepositions are either assigned by language specific rules or are

> determined by an idiosyncratic property of some governing word. The rules for English prepositions may look something like this: the A[gentive] preposition is *by*; the I[nstrumental] preposition is *by* if there is no A, otherwise it is *with*; the O[bjective] and F[actitive] prepositions are typically *zero*; the B[enefactive] preposition is typically *to*; the L[ocative] and T (for time) prepositions are either semantically nonempty (…), or they are selected by the particular associated noun (…) Specific verbs may have associated with them certain requirements for preposition choice that are exceptions to the above generalization.

[28] Since German has morphological case markers, the deep case marking should be a combination of grammatical cases and prepositions, e.g. the accusative marking could be the default Objective marking, the preposition *mit* ('with') the Instrumental marking. Compare Fillmore (1968: 15): "Prepositions in English-or the absence of a preposition before a noun phrase, which may be treated as corresponding to a zero or unmarked case affix-are selected on the basis of several types of structural features, and in ways that are exactly analogous to those which determine particular case forms in a language like Latin (…)"

Now consider the examples in (2.12).

(2.12) a. The meeting time depends on Ben's arrival.
b. Susan listens to her advisor.
c. Sandra was waiting for the train.

The prepositional phrases in (2.12a) - (2.12c) are Objective cases according to Fillmore's definition (1968: 25) and should therefore be zero-marked.[29] The surface structures, i.e. the sentences in (2.12), however, contain the prepositions *on*, *to*, and *for* to head oblique objects that are Objective cases. This stands in contrast to the rule of Objective case marking postulated by Fillmore (1968: 15) and subsequently leads to the conclusion that these prepositions must be idiosyncratically governed by the verbs, i.e. the lexical entry of the verb already contains the preposition and thus overrides the grammatical rules stated before. The same conflict is apparent for the German translations of (2.12) as can be seen in (2.13):

(2.13) a. Die Meetingzeit hängt von Bens Ankunft ab.
the meeting time.NOM depends from Ben's arrival PTCL
'The meeting time depends on Ben's arrival.'
b. Susan hört auf ihren Betreuer.
Susan.NOM listens on her advisor
'Susan listens to her advisor.'
c. Sandra wartete auf den Zug.
Sandra.NOM waited on the train
'Sandra waited/was waiting for the train.'

Most oblique objects in English and German should be either Factitive[30] or Objective deep cases based on Fillmore's definition of these cases and thus, as a class,

[29] "*Objective* (O), the semantically most neutral case, the case of anything representable by a noun whose role in the action or state is identified by the semantic interpretation of the verb itself; conceivably the concept should be limited to things which are affected by the action or state identified by the verb. The term is not to be confused with the notion of direct object, nor with the name of the surface case synonyms with accusative." (Fillmore 1968: 25) Note that the first part of the definition ("… the case of anything representable by a noun …") is in contrast to the second part ("… should be limited to things which are affected…"). In the absence of a more suitable case for prepositional objects, I focus on the first part of Fillmore's definition.

[30] "*Factitive* (F), the case of the object or being resulting from the action or state identified by the verb, or understood as a part of the meaning of the verb" (Fillmore 1968: 25).

are exceptions to the general deep case marking rules according to which these phrases should be noun phrases without prepositional heads. There are no rules proposed in Fillmore (1968) that regulate the selection of the preposition in these cases and, therefore, regular linking mechanisms between verbs and prepositional argument markers cannot be established using Fillmore's (1968) approach.

Another issue are the general linking rules, which should be universally applicable to all languages proposed by Fillmore, but they do not account for all data. For instance, Fillmore (1968: 33) suggests the 'unmarked' subject rule in (2.14) that aims to establish a regular linking between semantic roles – Fillmore's (1968) deep cases – and the grammatical function they map to within the sentences.

(2.14) Unmarked subject rule:
If there is an A[gentive], it becomes the subject; otherwise, if there is an I[nstrumental], it becomes the subject; otherwise, the subject is the O[bjective].

Consider (2.12a) again, given here for convenience as (2.15a) together with its German translation (2.15b).

(2.15) a. The meeting time depends on Ben's arrival.
b. Die Meetingzeit hängt von Bens Ankunft ab.
The meeting time.NOM depends from Ben's arrival PTCL
'The meeting time depends on Ben's arrival.'

There is neither an Agentive (an "animate perceived instigator of the action identified by the verb" (Fillmore 1968: 24)) nor an Instrumental in the English or the German sentences in (2.15). According to rule (2.14), the semantic role Objective, i.e. the noun phrases *Ben's arrival* and *Bens Ankunft* within the prepositional phrase, should be mapped to the grammatical function of the subject of the sentence which is not the case, leaving us with the conclusion that the subjects of (2.15), *the meeting time* and *die Meetingzeit*, are somehow marked. However, Fillmore does not explain what that

markedness of the grammatical subject could mean in this context. The analysis of the sentences in (2.12) and (2.15) shows that it is not possible to map reliably specific senses of grammatical prepositions to particular semantic roles, i.e. Fillmore's (1968) approach cannot be used to identify the semantics of prepositions as grammatical object markers, neither in English nor in German. Furthermore, Fillmore's (1968) mapping rules from semantic roles to grammatical functions are not borne out for English and German.

This shows that this early generative approach is not suitable to find and explain patterns of conventionalized verb-preposition combinations. According to Fillmore's approach, prepositions in oblique object phrases are necessarily anchored in the lexicon attached to the governing verb, and this view does not provide a working hypothesis for analyzing patterns of oblique objects headed by *auf* ('on') in German. One source of the problem is that Fillmore's (1968) deep cases, which are meant to be universal, are too coarse grained. In German, there are 17 prepositions (Breindl 2006: 939) that function as heads of oblique objects, but Fillmore (1968) suggests only two deep cases or semantic roles, i.e. Objective and Factitive, which these prepositions could encode. This situation does not allow for general linking rules between prepositions as markers of a grammatical function and semantic roles: there are too many markers of grammatical relations that map to too few semantic roles.

Generative analyses following Fillmore (1968) dropped the assumption that all semantic roles are marked by prepositions at deep structure. Instead, other mapping mechanisms of grammatical functions to semantic roles have been suggested, but these rules focus on the so-called structural cases, on the nominative case (subject) and the accusative case (direct object) as the default (see Dürscheid 1999 for German). Oblique objects are mentioned, but not analyzed, as one unified group within the category of inherent or lexical case that also comprises the dative and genitive cases which are all

seen as idiosyncratically selected by the governing verbs. Steinitz (1997), for instance, investigates valency-dependent prepositional phrases within the generative framework regarding their syntactic and semantic status. Steinitz claims a special role for valency-dependent PPs: "[V]alenznotwendige PPs sind keine referierenden Ausdrücke und auch keine Argumente, sondern etwas Drittes, semantisch Prädikate, syntaktisch Prädikative." (1997: 335).[31] Steinitz, however, categorically excludes prepositional phrases from her analysis when the preposition is selected or governed by a verb with non-local or non-directional meaning:

> Regierte Präpositionen in Präpositionalobjekten korrelieren mit Kasusaffixen und haben wie diese keinen spezifischen semantischen Gehalt. Diese sogenannten Kasuspräpositionen haben wesentliche Eigenschaften funktionaler Kategorien .... Die präpositionale Ausprägung der Rektion durch Verben und Adjektive ist sprachspezifisch und idiosynkratisch (Steinitz 1997: 329).[32]

This view excludes exactly the verb-preposition combinations that are the topic of my dissertation. Consequently, Steinitz' model as well as other generative theories with this line of argumentation cannot account for patterns that can be found in the verb-preposition distributions as in (2.16).[33]

(2.16) a. *hin*-verb *auf*$_{acc}$:
hinarbeiten ('to work towards'), *hindeuten* ('to point'),
hinsteuern ('to steer towards'), *hinweisen* ('to refer to'),
hinwirken ('to work towards'), *hinzielen* ('to aim towards')

[31] "Valency-dependent PPs are neither referring phrases nor arguments; instead they are something else of a third category, semantic predicates and syntactic predicatives" (Steinitz 1997: 335).

[32] "Governed prepositions in prepositional objects correlate with case affixes and like these, they don't have a specific semantic content. These so-called case prepositions have the basic characteristics of functional categories. …. The specific form of the prepositional when governed by verbs and adjectives is language specific and idiosyncratic. (Steinitz 1997: 329); for generative studies of German adjuncts see Maienborn (1990, 1994, 1996) and Pittner (1999) among others. For recent generative approaches to comparisons of case marking types across Germanic languages see Abraham (2006), who considers German to be a language without prepositional case marking (2006: 116) and therefore maps only the prepositional cases available in other Germanic languages like Dutch and Norwegian to German morphological cases, here the dative case.

[33] The verbs in (2.16) are taken from the German data set described in detail in chapter 4.

b. verbs denoting mental activities of a sentient subject towards the entity encoded by the PP_{auf}:
achten (‘to mind sth.’, ‘to look after’), *bestehen* (‘to insist’), *hoffen* (‘to hope’), *pochen* (‘to insist’), *rechnen* (‘to rely on’), *vertrauen* (‘to trust’), *verzichten* (‘to abstain from sth.’), *warten* (‘to wait for sth.’);
sich freuen (‘to look forward’), *sich einlassen* (‘to get involved with’), *sich einstimmen* (‘to get in the mood‘), *sich festlegen* (‘to commit to sth.’), *sich umstellen* (‘to adapt to sth.’), *sich verlassen* (‘to rely on’), *sich versteifen* (‘to persist on’), *sich vorbereiten* (‘to prepare’)

The verbs in (2.16a) all share the formal characteristics of the prefix *hin-* (best translated here as ‘towards’) and a prepositional object marked by *auf* (‘on’) that indicates the non-locative goal of the action denoted by the non-motion verb in some cases (*hinarbeiten*, *hinsteuern*, *hinwirken*, *hinzielen*). Comparing the definitions of the verbs according to Duden online in Table (2.5) reveals the related meaning component.

Table 2.5: Definitions of the Verbs of the Type *hin*-verb auf_{acc} according to Duden

Verb	**Definition according to Duden**	**English translation**
hinarbeiten (‘to work towards’)	Anstrengungen unternehmen, sich einsetzen, um etwas zu erreichen, zu verwirklichen	‘to make an effort, to be comitted to doing sth. in order to achieve or to realize sth.’
hindeuten (‘to point’)	auf jemanden, etwas, in eine bestimmte Richtung deuten	‘to point to/at s.o., sth., into a particular direction’
hinsteuern (‘to steer towards’)	auf ein bestimmtes Ziel zusteuern, eine bestimmte Absicht verfolgen, einer bestimmten Tendenz folgen	‘to steer toward a particular goal’, ‘to pursue a particular goal’, ‘to follow a particular tendency/trend’
hinweisen (‘to refer to’)	in eine bestimmte Richtung, auf etwas zeigen	‘to point into a particular direction, to/at sth.’
	jemandes Aufmerksamkeit auf etwas lenken, jemanden (besonders durch eine Äußerung) auf etwas aufmerksam machen	‘to call s.o.’s attention to sth.’, ‘to call s.o.’s attention to sth. (especially by making a remark)’
hinwirken (‘to work towards’)	Anstrengungen unternehmen, sich einsetzen, um etwas zu veranlassen	‘to make an effort, to be committed to doing sth. in order to initiate sth.’
hinzielen (‘to aim towards’)	auf etwas (als Ziel der Handlung oder [Rede]absicht) zielen	‘to aim at sth. (as a goal of the action or [speech] intention)’

The verbs in (2.16b) can be grouped together based on their shared meaning of denoting a mental activity of an animated, possibly human subject towards the object or event encoded by the prepositional phrase. The first group comprises the non-reflexive verbs, while the second group contains the reflexive verbs. The shared meaning component is based on the semantic description of the verbs in Duden (see Table (2.6) for the definition of the non-reflexive verbs, and Table (2.7) for the definition of the reflexive verbs).

Table 2.6: Definitions of the Non-Reflexive Verbs Denoting the Mental Activity of a Sentient Subject towards the Entity Encoded by PP_{auf} according to Duden

Verb	**Definition according to Duden**	**English translation**
achten (‘to mind sth.’, ‘to look after’)	jemandem, einer Sache Beachtung, Aufmerksamkeit schenken; jemanden, eine Sache beachten	‘to pay attention to s.o., sth.’, ‘to notice s.o., sth.’
bestehen (‘to insist’)	an etw. festhalten, etw. durchzusetzen suchen (DWDS)[34]	‘to adhere to sth.’, ‘to try to enforce sth.’
hoffen (‘to hope’)	auf jemanden, etwas seine Hoffnung, sein Vertrauen setzen	‘to pin one’s hopes, trust on s.o., sth.’
pochen (‘to insist’)	sich energisch auf etwas berufen; energisch, unnachgiebig (auf einem Recht o.Ä.) bestehen	‘to envoke vigrously sth.’; ‘to insist vigorously, adamant (on a right or sth. similar)’
rechnen (‘to rely on’)	auf jemanden, etwas bauen, sich verlassen	‘to rely on s.o., sth.’, ‘to trust in s.o., sth.’
vertrauen (‘to trust’)	in jemanden, etwas sein Vertrauen setzen; auf jemanden, etwas bauen; sicher sein, dass man sich auf jemanden, etwas verlassen kann	‘to trust in s.o., sth.’, ‘to rely on s.o., sth.’; ‘to be sure that one can trust in or rely on s.o., sth.’
verzichten (‘to abstain from sth.’)	den Anspruch auf etwas nicht [länger] geltend machen, aufgeben; auf [der Verwirklichung, Erfüllung von] etwas nicht länger bestehen	‘to not enforce (no longer), to abandon one’s claims to sth.’, ‘to insist no longer on [the realization, fulfillment of] sth.’
warten (‘to wait for sth.’)	dem Eintreffen einer Person, einer Sache, eines Ereignisses entgegensehen, wobei einem oft die Zeit besonders langsam zu vergehen scheint	‘to await the arrival of a person, a thing, an event during which period the time seems to go very slowly’

[34] The definition of the verb *bestehen auf* (‘to insist on’) is taken from the DWDS because it no longer exists in Duden online (http://www.duden.de/suchen/dudenonline/bestehen).

Table 2.7: Definitions of the Reflexive Verbs Denoting the Mental Activity of a Sentient Subject towards the Entity Encoded by PP_{auf} according to Duden

Verbs	**Definition according to Duden**	**English translation**
sich freuen (‘to look forward’)	Freude empfinden; voller Freude [und Fröhlichkeit] über etwas sein	‘to feel joy’, ‘to be full of joy [and happiness] about sth.’
sich einlassen (‘to get involved with’)	sich an etwas beteiligen, mitmachen	‘to take part in sth.’, ‘to join in sth.’
sich einstimmen (‘to get in the mood‘)	in sich die richtige innere Gestimmtheit bewirken, erzeugen	‘to cause, create the right mood in oneself’
sich festlegen (‘to commit to sth.’)	sich in Bezug auf etwas binden, verpflichten	‘to bind, commit oneself with regard of sth.’
sich umstellen (‘to adapt to sth.’)	sich auf etwas anderes einstellen; zu etwas anderem übergehen; auf veränderte Verhältnisse einstellen, veränderten Verhältnissen anpassen	‘to adjust oneself to sth. different’; ‘to change over to sth. different’; ‘to adapt, adjust to changed conditions’
sich verlassen (‘to rely on’)	uneingeschränkt (auf jemanden, etwas) vertrauen	‘to trust absolutely (in s.o., sth.)’
sich versteifen (‘to persist on’)	hartnäckig an etwas festhalten, auf etwas beharren, sich von etwas nicht abbringen lassen	‘to adhere to sth. persistently’, ‘to persist on sth.’, ‘to not let oneself being dissuaded from doing sth.’
sich vorbereiten (‘to prepare’)	sich auf etwas einstellen, sich für etwas leistungsfähig, geeignet machen	‘to prepare oneself for sth.’, ‘to make oneself capable, suitable, fit for sth.’

The analysis of patterns like those in (2.16) can provide insights into the structure of the (mental) lexicon, into verb semantics and they can also shed light on the selection processes of prepositions in oblique objects. However, the generative models reviewed so far do not provide the theoretical equipment for studying such patterns.

After surveying the early generative approach to prepositions as arguments markers by Fillmore, I now turn to a more recent generative account, namely Rauh (1993), which analyzes in detail the different functions and meanings that prepositions can have in a sentence. Rauh (1993) deals with English prepositions, but most of her analysis applies to German as well, as I will demonstrate.

Rauh’s (1993) approach is in line with generative research into the internal structure of prepositional phrases, in particular Jackendoff (1973), who set out to

acknowledge prepositions as a lexical category of its own that cannot be reduced to grammatical functions. He, however, only focuses on prepositions with clear lexical meanings that occur in adverbial phrases. Rauh (1993) aims to reconcile the two opposite positions of Fillmore (1968) and Jackendoff (1973) by recognizing different subtypes of prepositions according to their syntactic and semantic characteristics: Both grammatical prepositions and lexical prepositions are members of one category[35] of prepositions. They share some syntactic and semantic features but differ in other respects, which allows Rauh to establish subcategories. In order to make her point, Rauh investigates English primary spatial prepositions (e.g. *in*, *on*, *at*), spatial prepositions (e.g. *near*, *round*), denominal spatial prepositions (e.g. *in front of*, *on top of*), temporal prepositions (e.g. *before*, *after*, *until*), and causal and modal prepositions (e.g. *because of, on account of*). These prepositions are, according to Rauh (1993: 121), lexically autonomous and they function as syntactic and semantic heads of prepositional phrases.[36]

According to Rauh, "[a]ll primary spatial prepositions and some derived ones may occur in [grammatical] function" (1993: 140). With explicit reference to Fillmore (1968), she calls them "case prepositions." Rauh (1993: 121) proposes that these prepositions as argument markers are a subclass of prepositions that differ significantly in their syntactic and semantic properties from lexical prepositions. She argues that contrary to previous positions,

> … prepositions in these positions do not exhibit syntactic properties of a head. They take neither specifiers/attributes nor adjuncts (…).[37] No XP other than NP

[35] Rauh (1993) claims that there are three subcategories of prepositions: lexical and grammatical prepositions as well as prepositions in fixed phrases, e.g. *out of shape*. In a later paper (Rauh 1995: 165), she proposes five subgroups within the category of prepositions. This proposal is based on Rauh (1993) and maintains the basic opposition between grammatical and lexical prepositions and is therefore not discussed here in detail.

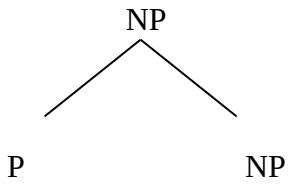
[36] For the full list of defining features of lexical prepositions see Rauh (1993: 121).

[37] Example (92) from Rauh (1993: 133):

> may follow, indicating that there is no genuine C-selection. (…) Semantic properties of heads are absent in the sense that P does not define the type of internal argument. This argument is defined semantically by the governing V, A or N (…) (Rauh 1993: 133f.).[38]

Rauh (1993) suggests a different phrase structure for prepositional objects, namely that they are noun phrases that incorporate the preposition as a case marker as in Figure (2.1).[39]

Figure 2.1: Phrase Structure of Grammatical PPs (Rauh 1993: 136)



Rauh (1993) claims that the noun is selected by the governing verb, noun or adjective, and that the preposition functions as a case marker and thus is equivalent to morphological case markers such as the suffix *–s* in the German definite article *des* (masculine and neuter singular), which marks the genitive case. However, she does not provide rules for the selection of specific prepositions as case markers:

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a. Bill [$_{VP}$ believes (*right) in science (*near mathematics)].
b. Bill is [$_{AP}$ good (*right) at tennis (*across the net)].
c. Bill is [$_{NP}$ an expert (*right) on instruments (*close to the news)].

[38] For a full list of feature of grammatical Ps identified by Rauh, see Rauh (1993: 141).

[39] A main argument for proposing this phrase structure is the phenomenon of preposition stranding in English, e.g. *What did you talk about*? It has been shown, however, that preposition stranding cannot be explained by the syntactic features and the hierarchical position of the prepositions. Instead, it depends to a large extend on discourse features (Boas 1997; Breindl 2006; Takami 1992). In German, preposition stranding is not possible in general (cf. Breindl 2006: 941). Split proforms of the prepositional phrase, e.g. *davon* → *da ... von* in the following example are phonologically restricted (Klumpp 1997):

da *weiß* *ich* *nichts* *von*
there know I nothing from
'I know nothing about it.'

> Instead of an unmarked Case, the governing N, A or N lexically assign the semantically and syntactically marked form P. P thus corresponds to inherent Cases in case-marking languages, for example, the accusative in the context of *lehren* ['to teach'] or the genitive in the context of *gedenken* ['to remember']in German, which are also assigned lexically (Rauh 1993: 136).

This means that in Rauh's analysis grammatical prepositions as part of oblique objects can be distinguished from lexical prepositions in adverbial phrases. But the individually selected prepositions are idiosyncratic properties of the governing elements and as such fixed in the lexicon.

Nevertheless, Rauh tries to identify regularities in the selection process based on the semantics of the preposition. On this view, grammatical prepositions may still have semantic meaning (theta properties, as Rauh calls them), or they may define the type of relation between the verb and the noun "[…], provided a metaphorical interpretation [of the preposition] is assumed" (Rauh 1993: 134),[40] as in the following examples.

(2.17) a. Bill lives on rice.
b. Bill participated in the meeting. (Rauh 1993: 135)

Rauh (1993: 135) claims that the prepositions *on* and *in* in (2.17a) and (2.17b) define the relations between the subject of the sentence, i.e. *Bill*, and the internal arguments, i.e. *rice* in (2.17a) and *the meeting* in (2.17b). On this view, the relation in (2.17a) is SUPPORT (the *rice* supports *Bill*), and in (2.17b) it is INCLUDE (*the meeting* includes *Bill*). This shows that Rauh assumes that the selection of the prepositions *on* and *in* in (2.17) is motivated by their primary meanings in spatial contexts. The problem, however, is that not all verbs select prepositions according to the (same) metaphoric extensions of their primary spatial meanings as my following examples show.

[40] Rauh's discussion of the semantics of the prepositions in this section is based on research in cognitive linguistics, in particular on Brugman (1988b), Lakoff (1987) and Langacker (1987). I review the cognitive linguistics approach to prepositions in Chapter 2.2.3.

(2.18) a. They agreed on the price.
b. Bill served on the committee.
c. These people believe in animal rights.

The preposition *on* in (2.18a) does not denote a SUPPORT relation between the subject *they* and the internal argument of the preposition *the price* as it does in (2.17a). In (2.18b), however, *on* labels the same INCLUDE relationship (*the committee* includes *Bill*) as the preposition *in* in (2.17b), whereas *in* in (2.18c) does not. These examples show that in Rauh's view one preposition can define different kinds of relations between two noun phrases. One or more of these relations could be motivated by metaphoric meaning extensions, but Rauh (1993) does not suggest rules or mechanisms that allow us to predict when a verb combines with a preposition based on metaphoric derivation from the spatial sense of the prepositions.

Similar problems occur with German data. Consider the examples in (2.19).

(2.19) a. Die Studie basiert auf Daten.
the study is based on data
'The study is based on data.'
b. Wir beziehen deine Wünsche in unsere Planung ein.
we factor your wishes in our planning PTCL
'We incorporate your wishes into our plans.'

The preposition *auf* ('on') in (2.19a) can be described as defining a SUPPORT relation between the subject *die Studie* ('the study') and the object of the preposition *Daten* ('data'), parallel to Rauh's discussion of the English example in (2.17a). Likewise, the preposition *in* ('in') in (2.19b) can be said to define an INCLUDE relation between the subject *wir* ('we') and the noun within the PP *unsere Planung* ('our plans'). Now compare the sentences in (2.20).

(2.20) a. Sie einigten sich auf den Preis.
they agreed REFL on the price
'They agreed on the price.'

b. Simone übt sich in der Kunst des Zeichnens.
Simone practices REFL in the art the drawing.GEN
'Simone practices drawing.'

The preposition *auf* in (2.20a) does not denote a SUPPORT relation between the subject *sie* ('they') and the noun *Preis* ('price') as *auf* does in (2.19a); and *in* ('in') (2.20b) does not denote an INCLUDE relation between the subject *Simone* and the noun phrase *Kunst des Zeichnens* ('art of drawing'). From these examples we can see that also German does not have rules that predict the use of a certain preposition for expressing a particular semantic relation between two noun phrases.

The data discussed in (2.17)-(2.20) illustrate that despite the detailed structural description of verb-preposition combinations in generative grammar, these models have little explanatory power when it comes to accounting for specific verb-preposition combinations like those in (2.16). From the discussion above we can see that the same preposition is used for labeling different semantic relations and that one semantic relation can be encoded by different prepositions. The general mechanisms proposed by Rauh cannot account for subpatterns within the category of grammatical prepositions. The metaphorical interpretation of the preposition might be used to explain the occurrence of a preposition in a particular structure, but it cannot be used as a constraint to predict the patterns of verb-preposition combinations.

To sum up, I have argued thus far that approaches to prepositional arguments within generative grammar are not suitable to capture patterns of verb-preposition combinations in oblique objects, neither in English nor in German. Next, I discuss how cognitivist approaches account for meanings of prepositions.

2.3.3 Prepositions in Cognitive Linguistics

Cognitive linguistics is based on three major hypotheses: first, language is not an autonomous cognitive faculty; instead it is similar to other cognitive abilities of human beings. "That is, the organization and retrieval of linguistic knowledge is not significantly different from the organization and retrieval of other knowledge in the mind" (Croft and Cruse 2004: 2). Second, grammar is conceptualization, i.e. it is based on human experience in which linguistic structures are grounded. Third, knowledge of language emerges from language use, "[t]hat is, categories and structures in semantics, syntax, morphology and phonology are built up from our cognition of specific utterances on specific occasions of use" (Croft and Cruse 2004: 3f.).

Prepositions have been one center of attention for cognitive linguists (e.g. Brugman 1981/1988, Lakoff 1987, Tyler and Evans 2001, 2003, and Van der Gucht et al. 2007, among others). They are highly polysemous and therefore lend themselves to study the relationship between the different senses and how they come about in the human mind. Starting with Brugman (1981/1988),[41] cognitive linguists have claimed that highly polysemous words like prepositions form so-called radial polysemy networks with one central member. The central member of such a polysemy network is thought of as the basic sense of the word from which the other, non-central members are directly or indirectly derived. This means the non-central members of the network are variants either of the central member or of another variant within the network (Brugman and Lakoff 2006: 109). These variants, or senses, of the word are thought of as *image schemas* (Johnson 1987), which "can generally be defined as dynamic analog representations of

[41] "The preposition *over* plays a role in Cognitive Semantics that is somewhat comparable to that of *bachelor* in Katzian semantics: from Brugman (1981, 1988) over Vandeloise (1990), Cuyckens (1991), Deane (1992), and Dewell (1994), to Tyler and Evans (2001), Tyler and Evans (2003), it has been a rallying-point for comparing competing forms of semantic analysis." (Geeraerts 2006: 48) But see Tyler and Evans (2001), among others, for a critical review of Brugman's research methodology.

spatial relations and movement in space*"* (Gibbs and Colston 2006: 240). According to Johnson (1987: 30), image schemas are "primary means by which we construct or constitute order." Applying these ideas to prepositions, this means that the central member of a preposition's network is a basic local constellation of a trajectory with regard to a landmark.[42] The other senses of the preposition are arrived at by transforming the image schema into a related trajectory-landmark configuration, i.e. all members of a preposition's network should have a connection to a local meaning. I examine the cognitive linguistics approach with regard to my research question about possible patterns of verb-PP_{auf} combinations. The focus is on whether grammatical prepositions can be derived from the local configuration that members of their polysemy network encode, and the role of the verb in the relationship between trajectory and landmark. In the following section I first discuss the analysis of the preposition *over* based on the work by Brugman (1981/1988) and Lakoff (1987) that laid the foundation for the extensive research done in this area. Following the presentation of the basic ideas and principles I introduce and compare the two analyses of the German preposition *über* ('above') by Liamkina (2007) and Meex (2001). In the absence of studies in Cognitive Linguistics about the German preposition *auf* ('on'), these analyses serve as models for the treatment of German prepositions within this theoretical framework.

Brugman establishes in her (1981) study of English *over* 24 senses of this preposition. The central sense, or image schema, of the polysemy network of *over* is the *above-across sense* illustrated in (2.21) (Lakoff 1987: 419).

[42] "Trajectory and landmark are generalizations of Langacker's (1987) concepts of figure and ground." (Lakoff 1987: 419). A figure or trajectory is the object that is in the focus of attention. The ground or the landmark is in the background and receives less attention. The trajectory is on a motion path or in a particular position described by a preposition with regard to the landmark in spatial situations (Trask 2007: 301).

(2.21) The plane flew *over*.

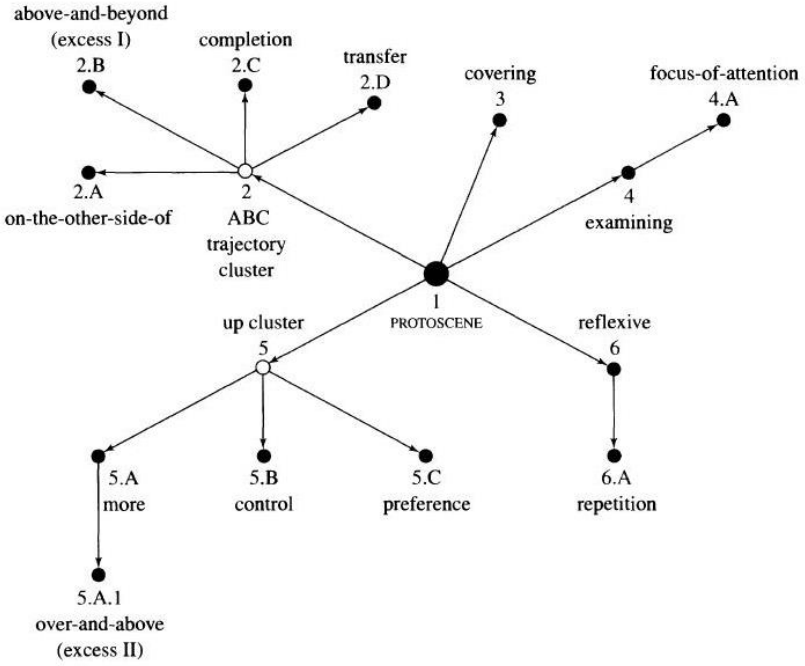
A trajectory, the *plane*, is moving above and across an unspecified landmark. The 23 other senses in the polysemy network are linked to the above-across sense. Some of the senses are illustrated in (2.22a)-(2.22f); note that not all the instances of *over* are prepositions (cf. (2.22d-f)).

(2.22) a. Sam climbed *over* the wall. (Brugman and Lakoff 2006: 115)
b. Sam walked *over* the hill. (Brugman and Lakoff 2006: 115)
c. The power line stretches *over* the yard. (Brugman and Lakoff 2006: 119)
d. The bathtub *over*flowed. (Brugman and Lakoff 2006: 127)
e. Do it *over*. (Brugman and Lakoff 2006: 128)
f. Sam was passed *over* for promotion. (Brugman and Lakoff 2006: 130)

The links between the senses come about via image-schema transformations based on instances (2.22a), similarities (2.22b), transformations (2.22c), metaphors (2.22d-f) (cf. Brugman and Lakoff 2006: 115-130). That means the instances of the word *over* in (2.22a)-(2.22f) are related senses derived from one central member of the polysemy network of *over*. A graphic representation of the polysemy network of *over* is given in Figure (2.2).[43]

[43] Brugman (1981/1988) and Lakoff (1987) do not provide a graphic of the *over*-network. For illustration purposes I therefore use the diagram developed by Tyler and Evans (2001). For theory-internal reasons, Tyler and Evans (2001) postulate only 16 senses of *over*. However, their proposal is a direct response to Brugman (1988a), Brugman and Lakoff (1988) and Lakoff (1987) and maintains the main idea laid out in this chapter. (Tyler and Evans (2001) criticize that Brugman and Lakoff's approach lack a principled method to define and distinguish different senses and therefore postulate too many of them in their network while not taking into account context and world knowledge: "We will argue that a significant problem with previous approaches is that they fail to distinguish between what is coded by a lexical expression and the information that must be derived from context, background knowledge of the world, and spatial relations in general. That is, previous analyses fail to take account of meaning construction as a process which relies upon conceptual integration of linguistic and nonlinguistic prompts, guided by various global cognitive principles. Hence, we follow recent work in cognitive linguistics (…), which posits that formal linguistic expression underspecifies for meaning" (Tyler and Evans 2001: 726)).

Figure 2.2: The Semantic Network of *over* according to Tyler and Evans (2001)



(Tyler and Evans 2001: 746)

Figure (2.2) shows that the radial polysemy network of *over* has 14 distinct senses: one central sense, the protoscene (1) from which two clusters of senses (2 and 5) and five other distinct senses (3, 4, 4.A, 6, and 6.A) are derived and stored in long-term memory according to Tyler and Evans (2001: 746). Cluster 2 and sense 3 contain spatial senses (2.A, 2.B, and 3). The other senses are metaphorically derived non-spatial senses; the names indicate their range of meaning.

Lakoff (1987: 460), however, also states that although the meaning extensions are motivated through the image-schema transformations they are not predictable. This line of reasoning focuses on analyzing of the word *over* without taking into consideration the linguistic context of the sentences in which it appears. It is not clear and can hardly be tested, however, that the established senses of a preposition are indeed image schemas that include all the proposed information (e.g. vertical vs. horizontal extension of the

landmark in (2.22a) vs. (2.22b), or contact between the trajectory and the landmark (2.22a, b) vs. no contact (2.22c)), because the different senses must be analyzed as a result of embedding *over* in different linguistic contexts. However, it is not obvious how much and which type of information is provided by context and world knowledge and what is part of the prepositional meaning (see Van der Gucht et al. 2007).

Another problem arises from the general architecture of the polysemy network of a preposition and that the relationship between the established senses is based to a large extent on intuition rather than more extensive data collections as found in large electronic corpora. It is not surprising, therefore, that different scholars arrive at different networks for one preposition, regarding the number of prepositional senses as well as the relationship between the senses and their derivations from each other or a central member of the network. To illustrate, I now compare two studies of the German preposition *über* ('over') (Liamkina 2007, Meex 2001) to show that these methodological difficulties exist independently of the language that is analyzed.

Liamkina (2007) and Meex (2001) both employ image schemas and image schema transformations based on metaphors. Meex' (2001) study is based on 11 German newspapers, 12 German magazines, and five German novels (cf. Meex 2001: 31f.). Liamkina, apparently unaware of Meex' (2001) work, bases her analysis on German translations of English sentences containing the preposition *over* from Taylor and Evans (2003) (Liamkina 2007: 120f.). Meex' analysis results in 39 senses, whereas Liamkina arrives at only 13 senses.

Meex (2001) and Liamkina (2007) both arrive at similar interpretations for the local uses of the preposition *über* as in (2.23).

(2.23) a. Sie sprang über den Zaun. (Meex 2001: 4)
She.NOM jumped over the fence.ACC
'She jumped over the fence.'

b. Das Pferd ist über den Zaun
The horse.NOM is over the fence.ACC
gesprungen. (Liamkina 2007: 126)
jump-PTCP
'The horse jumped over the fence.'

The preposition *über* ('over') in (2.23a) has the "landmark as an obstacle or boundary" sense according to Meex (2001: 3). Liamkina (2007: 127) calls this sense of *über* in (2.23b) the "on-the-other-side-of"-sense which is different only in its name to Meex' sense. In both analyses, the landmark, *Zaun* ('fence'), is perceived as an obstacle or a boundary that the trajectory, *Pferd* ('horse'), literally overcomes by jumping. The two studies, however, differ considerably in evaluating the abstract senses that, according to the authors, are derived from the local sense. Consider the uses of the preposition *über* in (2.24).

(2.24) a. Er sitzt über seinen Büchern. (Meex 2001: 14)
He.NOM sits over his books.DAT
'He pores over his books.'

b. Sie sitzt den ganzen Tag (Liamkina 2007: 140)
She.NOM sits the whole day
über ihren Büchern.
over her books.DAT
'She pores over her books all day long.'

(2.24a) and (2.24b) are identical in meaning. Consequently, the preposition *über* should have the same sense in both studies. However, Meex (2001) analyzes *über* in (2.24a) as a static-local sense that involves two metonymy relations: "First, the head stands metonymically for the entire person. Secondly and more importantly, the static location denoted by spatial *über* stands metonymically for the activity one performs while being in this location" (Meex 2001: 14). Liamkina, on the other hand, assigns the abstract

"Focus of Attention Sense" to the preposition in (2.24b), which she claims is derived from the local sense.

Note that the analyses of the denoted situation do not vary in the two studies; nevertheless, the senses assigned are not identical, because Meex interprets the sentence literally, disregarding the non-spatial meaning of the sentence as a whole (i.e. the intellectual activity as opposed to a description of a person sitting in one place). For Liamkina, the non-spatial but rather intellectual reading of the sentence is more prominent. She projects this non-spatial reading of the sentence into the meaning of the preposition and therefore she assigns a derived, non-local sense to *über*. It is not clear from the theoretical principles of cognitive linguistics which of the two approaches is "correct" or should be preferred. Both analyses are logical in the broadest sense and they are not in conflict with the theoretical foundations of cognitive linguistics. Therefore, neither of them can be rejected on theory-internal grounds. Instead, I argue that the differing accounts in Meex (2001) and Liamkina (2007) reflect the difficulties of cognitive linguistics dealing with senses of prepositions, and with polysemy in general, which Taylor (2003: 638) points out succinctly:

> Taylor (1995: 99) defined polysemy as ''the association of two or more related senses with a single linguistic form''. Though seemingly unproblematic, (…) this definition raises a number of conceptual and methodological questions. First, the definition presupposes that we have a clear idea what kind of entity the 'sense', or 'meaning' of a linguistic form is (…), also that we have procedures for reliably identifying such entities and criteria for determining whether, and in what way, these entities, once identified, are related. We also need to address the cognitive status of the meanings and the meaning relations thus identified. Are the different senses permanently stored in a person's mental grammar? Are the sense relations also represented? Are at least some meanings of a polysemous form generated online, in the processes of production and reception?

Based on the discussion above and Taylor's (2003) evaluation, I conclude that previous analyses within cognitive linguistics do not lend themselves easily to account

for patterns of verb-preposition combinations. To sum up, prepositions are highly polysemous lexical items that form radial networks of related senses according to cognitive linguistics. Prepositions as grammatical markers, however do not have a clearly delimited lexical meaning. The analyses of prepositions within the framework of cognitive linguistics show that the selection of a particular, grammatical preposition by a governing verb can be analyzed as being motivated by and derived from the spatial senses of the preposition in some contexts. However, there are two problems that arise from this approach regarding the question of regular verb-preposition combinations. First, recognizing that the choice of a particular preposition in a usage context is motivated can perhaps explain the selection, but motivation cannot be used to predict usage patterns, as pointed out by Lakoff (1987: 460). The second problem lies in the interpretation-based methodology of analyzing the related senses, which allows for diverging, yet equally valid results. Therefore I claim that the polysemy network approach to prepositions within cognitive linguistics is not an appropriate frame for analyzing regularities of verb-preposition combinations. In the next section I survey approaches to prepositions as oblique object markers within valency theory.

2.3.4 Prepositional Objects in Valency Theory

Valency theory aims to account for all possible syntactic structures in a language based on basic sentence models, so-called *Satzbaupläne* (Admoni 1982, Brinkmann 1971, Helbig 1992, among others). In valency theory, sentences are projected from the verb, and special emphasis is laid on the licensing and of obligatory and non-obligatory verbal arguments and adjuncts that can occur considerably less restricted in sentences. This is the context in which prepositional phrases have mostly been discussed (e.g.

Heringer 1968; Eroms 1981; Domínguez Vázquez 2005). Prepositional Phrases belong to all three classes, i.e. they can function as arguments governed by the verb (2.25a-c) or as adverbials that modify phrases within the sentence (2.25d) or the whole sentence (2.25e).

(2.25) a. Martin wartet auf das Flugzeug.
Martin.NOM waits on the airplane.ACC
'Martin is waiting for the airplane.'

b. Maria stellt die Teller auf den Tisch.
Maria.NOM puts the plates.ACC on the table.ACC
'Maria is putting the plates on the table.'

c. Maria stellt die Teller unter den Tisch.
Maria.NOM puts the plates.ACC under the table.ACC
'Maria is putting the plates under the table.'

d. Die Schuhe auf dem Tisch gehören Niko.
The shoes on the table. DAT belong-to Niko.DAT
'The shoes on the table belong to Niko.'

e. Wir essen unseren Kuchen heute
We.NOM eat our cake.ACC today
auf der Terrasse.
on the patio.DAT
'We are eating our cake today on the patio.'

Prepositional objects are only those PPs that are governed, or subcategorized, by the verb as in (2.25.a). In contexts like (2.25b-c) the prepositional phrase is subcategorized for by the verb, but the preposition itself is chosen according to the context, i.e. the internal noun phrase and the extra-linguistic reality. PPs in this function are called adverbial complements (Breindl 2006: 936) in valency theory. However, as clear-cut these categories may seem, it is impossible to define them in such a way so that all uses of prepositional phrases can be assigned to exactly one category. Consider (2.26).

(2.26) a. Martin wartet auf/ *in/*hinter das Flugzeug.
Martin.NOM waits on/ *in/*behindthe airplane.ACC
'Martin is waiting on the airplane.'

b. Martin wartet, dass das Flugzeug kommt.
Martin.NOM waits that that the airplane.NOM arrives
'Martin is waiting for the airplane to arrive.'

c. Martin wartet.
Martin.NOM waits
'Martin is waiting.'

d. Martin achtet auf/ *in/*hinter den Verkehr.
Martin.NOM focuses on/ *in/*behind the traffic. ACC
'Martin is paying attention to the traffic.'

e. *Martin achtet, wie die anderen Autos fahren.
*Martin.NOM focuses, how the other cars.NOM drive.
'Martin focuses how the other cars drive.'

f. Martin achtet darauf,
Martin. NOM focuses there. ADV.-r-on.PREP
wie die anderen Autos fahren.
how the other cars.NOM drive.
'Martin focuses on how the other cars drive.'

g. *Martin achtet.
Martin.NOM focuses
'Martin is focusing.'

The preposition *auf* heading the prepositional phrase in (2.26a) cannot be replaced by other prepositions; in this sense it is obligatory. But the same situation as in (2.26a) can be expressed in a different way: in (2.26b), the information encoded by PP_{auf} is expressed in a subordinate clause headed by the conjunction *dass* ('that'). Furthermore, the verb *warten* ('to wait') can be realized in an acceptable sentence without any arguments, but with the same or at least a very similar meaning as (2.26c). Nevertheless, the status of the prepositional phrase is characterized as an obligatory argument in E-VALBU[44] and Helbig and Buscha (2001: 53). If that were true, the sentences in (2.26b-c) should either be not acceptable or they would illustrate different verb senses that have different valencies. However, the comparison of (2.26a-c) with (2.26d-g) reveals a different kind of relationship between the verb *achten* and the subcategorized prepositional argument, which is also marked as obligatory in E-VALBU and Helbig and Buscha (2001: 53). The verbal argument of *achten* is literally obligatory; it needs to be realized – as a PP or a pro-form – in clauses containing the verb. The different

[44] http://hypermedia2.ids-mannheim.de/evalbu/index.html, 03/11/2013.

distributions of verbs cause theoretical problems for valency theory because it is verb-centered and cannot easily incorporate contextual information and world knowledge in a systematic way. This leads me to take a pragmatic approach to selecting the data that is described in Chapter 4. Now I review Heringer (1968), Eroms (1981, 1991) and Domínguez Vázquez (2005) as exemplary studies within valency theory.

Heringer (1968) argues that prepositional objects have the same syntactic status as case-marked objects, a view comparable to Fillmore (1968). According to Heringer, the prepositions do not have lexical meaning but a purely syntactic function identical to morphologically marked objects: they mark the relation of the governing predicate to the dependent (prepositional) object (Heringer 1968: 434f.). Heringer proposes a descriptive taxonomy based on possible valency patterns of German verbs, according to number and grammatical case of the arguments. The semantics of the prepositions is only important for Heringer (1) with regard to distinguishing verbs meanings, e.g. *glauben* + NP_{dat} ('to believe someone') vs. *glauben* + PP_{an} ('to believe in someone/something'),[45] and (2) for explaining the selection of particular prepositions by the verb in earlier stages of the German language: "Syntaktische Präpositionen scheinen i.a. aus semantischen durch Übertragung oder Bedeutungsveränderung des Verbs zu entstehen …" (Heringer 1968: 449).[46] With his influential ideas Heringer (1968) in a way set the stage for subsequent research on prepositional objects in valency theory. He raises the problem of defining and distinguishing prepositional objects from other prepositional phrases on a theoretical level and he delegates the semantics of the prepositions of these objects to diachronic linguistics. From a synchronic perspective, the preposition is contained within the lexical

[45] Heringer (1968) does not investigate the meaning of these verbs which are clearly related, but not identical.

[46] "Syntactic prepositions seem in general to develop from semantic prepositions through transfer or a change of the meaning of the verb …" (Heringer 1968: 449).

entry and as such it is an idiosyncratic feature of the verb. Questions about verb-preposition combinations and systematic patterns are not directly addressed by Heringer.

In contrast to Heringer (1968), Eroms (1981, 1991) provides an in-depth investigation into the syntax and semantics of prepositional objects and offers one interesting suggestion. He proposes that prepositional objects are distinguished from case marked objects in that they are marking complex arguments that are actually embedded propositions as in (2.27a)-(2.27b) (Eroms 1991: 48).[47]

(2.27) a. Wir warten auf Otto. (Eroms 1991: 49)
we.NOM wait on Otto.ACC
'We are waiting for Otto.'

b. Unser Schulwesen leidet unter
our educational system.NOM suffers under
dem Lehrermangel.
the shortage of teachers.DAT (Eroms 1991: 48)
'Our educational system is short of teachers.'

According to Eroms (1991: 48), the prepositional phrases in (2.27a)-(2.27b) can be transformed into subordinated clauses (cf. (2.28a)-(2.28b)).

(2.28) a. Wir warten darauf
we.NOM wait there.ADV-r-on.PREP
dass der Zeitpunkt eintritt,
that the point in time.NOM occurs
an dem Otto kommt.
at that.DAT Otto.NOM comes
'We are waiting for the point in time when Otto will be arriving.' (Eroms 1991: 50)

[47] "Es wird deutlich, daß das System der Präpositionalobjekte im Deutschen an das präpositionale System schlechthin angeschlossen werden kann. Zu bestimmen ist nun, welches die spezifischen syntaktischen Leistungen der Präpositionalobjekte sind. Den Ansatzpunkt bietet ihre Komprimierungsleistung; Die expliziten Satzparaphrasen zeigen nämlich, daß mit dem präpositionalen Anschluß in vielen Fällen eine tiefer eingebettete Prädikation verbunden ist." (Eroms 1991: 48) ("It is obvious that the system of prepositional objects in German can be connected to the prepositional system as such. Now an analysis is needed regarding the specific syntactic potential of prepositional objects. Their compression ability points into one direction; The explicit sentence paraphrases show that a deeper embedded predication is connected with the attachment of the preposition.") (Eroms 1991: 49).

b. Unser Schulwesen leidet darunter,
our educational system.NOM suffers there.ADV-r-under.PREP
dass Lehrermangel besteht.
that shortage of teachers.NOM exists
'Our educational system is suffering because there is a shortage of teachers.' (Eroms 1991: 49)

However, I argue that although a syntactic transformation is possible in both sentences, the meanings of the original sentences are not always preserved. Compare, for instance, the sentence pair in (2.29) in which the verb *leiden unter* ('to suffer from') from Erom's example (2.27b, 2.28b) is used in a different context.

(2.29) a. Angela leidet unter einer Pollenallergie.
Angela.NOM suffers under a pollen-allergy.DAT
'Angela suffers from an allergy to pollen.'
b. Angela leidet, weil sie eine Pollenallergie
Angela.NOM suffers because she a pollen-allergy.ACC
hat
has.
'Angela is suffering because she has an allergy to pollen.'

(2.29a) expresses a general state of the subject, namely that the subject has a seasonal medical condition, an allergy to pollen, whereas (2.29b) expresses a present state of suffering following from this general condition. Moreover, some prepositional object phrases cannot be transformed into subordinated clauses. Examples with similar verbs are shown in (2.30a)-(2.30b).

(2.30) a. Corinna zählt auf seine Unterstützung.
Corinna.NOM counts on his support.ACC
'Corinna is counting on his support.'
a'. *Corinna zählt, dass er sie unterstützt.
Corinna.NOM counts that he NOM she.ACC supports
*'Corinna counts that he will support her.'
a''. Corinna zählt darauf,
Corinna NOM counts there.ADV-r-on.PREP
dass er sie unterstützt.
that he.NOM she.ACC supports
'Corinna counts on it that he will support her.'

b. Hermann verlässt sich auf seinen Freund.
Hermann.NOM relies REFL on his friend.DAT
'Hermann is relying on his friend.'

b'. *Hermann verlässt sich, dass sein Freund
Hermann.NOM relies REFL that his friend.NOM
kommt.
comes
'Hermann relies that his friend will come.'

b''. Hermann verlässt sich darauf,
Hermann.NOM relies REFL there.ADV-r-on.PREP
dass sein Freund. kommt.
that his friend.NOM comes
'Hermann relies on the fact that his friend will come.'

c. Das Boot besteht aus Holz.
the boat.nom consists from wood.dat
'The boat consists of wood.'

c'. *Das Boot besteht daraus,
the boat.nom consists there.ADV-r-from.PREP
dass Holz existiert.
that wood.nom exists.
*'The boat consists on that wood exists.'

According to Eroms' line of argumentation, the transformation of the prepositional objects in (2.30a)-(2.30b) into subordinate clauses is only possible when a correlate for the prepositional phrase is used (cf. (2.30a'')-(2.30b'')). But from the data in (2.31a)-(2.31a') I conclude that such transformations are also possible for case-marked objects.

(2.31) a. Heidi unterstützt sein Engagement für Kinder.
Heidi.NOM supports his commitment.ACC for children
'Heidi supports his commitment for children.'

a'. Heidi unterstützt (es), dass er
Heidi NOM supports (it. ACC) that he NOM
sich für Kinder engagiert.
REFL for children engages
'Heidi supports that he is committed to helping children.'

The possibility of such transformations seems to depend on the verb meaning as well as on the type of object. Note also that the prepositional object in (2.29c) cannot be transformed into a complex phrase, suggesting that it does not denote a proposition at all.

The examples show that the argument of the semantic complexity of the prepositional object is not completely borne out and needs to be investigated further. From the data in (2.28), (2.29), (2.30) and (2.31) I conclude that many but not all prepositional objects are compressed propositions and that the semantic complexity of the PP depends on the verb meaning and the extra-linguistic situation is denotes.

In terms of the semantics of the preposition, Eroms (1981, 1991) claims that prepositions are relation markers with a very abstract basic meaning, even in adverbial, i.e. local or temporal, function. Eroms bases this view on Brinkmann (1971) and postulates a so-called *Grundlage* ('foundation') as the basic, abstract meaning of the preposition *auf* (Eroms 1991: 47f.). 'Foundation', however is a concrete concept firmly rooted in spatial experience. Besides, Eroms' view on this matter is in conflict with the insights gained from cognitive linguistics about embodied meaning (e.g. Lakoff and Johnson 1980). Therefore, Eroms' suggestion of a basic abstract meaning of the preposition is untenable. Next, I turn to the newest study of German oblique objects within valency theory, Dominguez Vázquez (2005).

Dominguez Vázquez (2005) aims to determine regularities in the meaning and usage of prepositions heading oblique objects in German and to compare them to their Spanish counterparts. The main purpose of her study is to provide foreign language learners in both languages with a structured approach to deal with these conventionalized combinations since prepositions in general and preposition attachment in oblique objects pose many problems in foreign language learning. The first half of her study is concerned with theoretical questions regarding the status of PPs as prepositional objects delimitating

them from other kinds of phrases subcategorized for by the verbs. Dominguez Vázquez bases her definition of prepositional object on Engel's (1996) model of valency,[48] thereby adopting Engel's version of semantic roles that he calls *Relatoren* 'relators' (Dominguez Vázquez 2005: 144). Engel reduces the number of semantic roles to four,[49] based on his claim that "… alle übrigen Bedeutungsdifferenzierungen, die zu einer immer wechselnden steigenden Zahl ständig neuer Kasus, Thetarollen usw. Anlaß gaben, [...] in Wirklichkeit Elemente der inhärenten, nicht der kombinatorischen Verbbedeutung [sind]" (Engel 1996: 232).[50] Equipped with these theoretical tools, Dominguez Vázquez (2005) conducted a corpus study of the four Spanish prepositions *de* ('of', 'from'), *con* ('with'), *en* ('in') and *a* ('to'). First, Dominguez Vázquez (2005) determined a list of Spanish verbs that subcategorize for a prepositional object with the four above mentioned prepositions and categorizes them in classes according to the theory of semantic fields (Engelen 1970) based on the dictionary "Verben in Feldern" ('Verbs in semantic fields', Schumacher 1986) that structures the German verbal lexicon according to semantic features. Next, she finds German verbs with prepositional objects in these classes[51] and orders them according to the prepositions and the membership to the same semantic group as their Spanish translation in order to find regular patterns. The second half of

[48] Engel develops a so-called 'mono-criterial' valency concept (Hölzner 2007: 8f.), based on subcategorization requirements of the verbs: "Glieder, die von allen Elementen einer Wortklasse abhängen (können), sind Angaben. Glieder, die nur von bestimmten Elementen einer Wortklasse abhängen (können), sind Ergänzungen. Oder: Ergänzungen sind subklassenspezifische Glieder." (Engel 1991: 23). ("Phrases that are or can be dependent on all elements of a word class are adjuncts. Phrases that are or can be dependent only on particular elements of a word class are arguments. Or: Arguments are subcategorized phrases." (Engel 1991: 23).

[49] These four relators are Locativ (LOC), Agentivn (AGT), Affektiv (AFF) and Klassifikativ (KLS) (cf. Dominguez Vázquez 2005: 146-156 for more detail).

[50] "… all other meaning differentiations that led to a constantly changing number of constantly new cases, theta-roles etc. are in reality elements of the inherent meaning of the verbs and not elements of the combinatorial verb meaning" (Engel 1996: 232).

[51] Dominguez Vázquez (2005) bases her analysis on of written language. For Spanish, she uses the database BDS at the University of Santiago de Compostela; for German, she uses the corpora of the Institut für Deutsche Sprache, Mannheim (IDS) (Dominguez Vázquez 2005: 18).

Dominguez Vázquez' study consists of listing and describing the groups of verb in 16 semantic fields where she finds systematic relationships of preposition attachment in Spanish and German.[52] These classes, however, comprise verbs that are very different in meaning. For instance, Dominguez Vázquez (2005: 165) establishes the class "verbs of removal, elimination or distance[53]/difference" with four subgroups.[54] One of the subgroups are "verbs of removal/elimination or distance": (a) *abmelden* ('to give notice of leaving', 'to sign off', 'to resign') and (b) *reinigen* ('to clean') in the sense of *reinwaschen* ('to wash clean' or 'to acquit oneself of something').[55] According to Dominguez Vázquez, these verbs combine with the preposition *von* ('from'), as in (2.32a)-(2.32d).

(2.32) a. Kurt meldete sich von der Schule /
Kurt.NOM resigned REFL from the school/
bei seinem Verein/ aus Deutschland ab.
at his club/ from Germany PTCL
'Kurt resigned from school/from his club/gave official notice of leaving Germany.'

b. Petra reinigt das Kleid von/ *aus/ *bei
Petra.NOM cleans the dress.ACC from/*out of/ *at
Flecken.
stains
'Petra washes the stains out of the dress.'

[52] I assume that Dominguez Vázquez excluded data that did not fit in any pattern because she is foremost interested in regularities of the distribution of prepositions as object markers in Spanish and German.

[53] Dominguez Vázquez names this group *Entfernung* which has two meanings: 1st 'distance' and 2nd 'removal'/'elimination'. It is not clear to me which of the meanings she has in mind. Her examples seem to collapse all of them, which results in a heterogeneous group of verbs.

[54] Dominguez Vázquez (2005: 158) defines this class as follows: "Mit diesen Verben wird ausgedrückt, dass ein handlungsfähiges Individuum sich von einer Entität oder von zwei Entitäten entfernt, was geistig oder materiell geschehen kann" ('These verbs are used to express that an individual capable of acting removes or distances oneself from one or two entities; that can happen in a material or mental way.').

[55] Duden online lists only the latter meaning for *reinwaschen*: to acquit oneself of something.

c. Petra wäscht das Kleid von/ *aus/ *bei
Petra.NOM washes the dress.ACC from/ out of/ at
Flecken rein.
stains.DAT PTCL
'Petra washes the stains out of the dress.'

d. Petra wäscht sich/ Udo
Petra.NOM washes REFL Udo.ACC
(von/ *aus/ *bei jeder Schuld) rein.
(of/*at from/*out every guilt) PTCL
'Petra clears herself/Udo of guilt.'

However, a closer analysis of the examples in (2.32a-d) reveals differences between these verbs which could serve as a motivation to arrange them in different semantic classes. (2.32a) denotes a situation in which the subject follows a specific, officially determined procedure in order to withdraw from a social institution or group. The sentences (2.32b-c) express situations where a subject is cleaning an object, and (2.32d) is an idiomatic use of the verb 'to clean' which metaphorically denotes a situation in which the subject acquits herself or another person of something negative. These observations about the meanings of verbs and their grouping into semantic categories, or verb classes, according to their shared semantic features highlight again the question of solid ground in lexical semantics, a central problem when dealing with word meanings. Hanks (2000: 210-214) describes this difficult situation as follows:

> In the everyday use of language, meanings are events, not entities. Do meanings also exist outside the transactional contexts in which they are used? It is a convenient shorthand to talk about "the meanings of words in a dictionary", but strictly speaking these are not meanings at all. Rather, they are 'meaning potentials' – potential contributions to the meanings of texts and conversations in which the words are used, and activated by the speaker who uses them. … The meaning potential of each word is made up of a number of components, which may be activated cognitively by other words in the context in which it is used. These cognitive components are linked in a network which provides the whole semantic base of the language, with enormous dynamic potential for saying new things and relating the unknown to the known.

This means that the results of studies in lexical semantics, such as works discussed in this chapter as well as my own analyses in chapter 5 and 6 of this dissertation not only depend on the choosen theoretical approach, but also on the context in which the verbs are analyzed as well as the perception and interpretation of the researcher which, in turn, are depending on their research question and the goal of their study. I use the framework of Frame Semantics described in chapter 3 in order to account for the senses of the verb-PP_{auf} combinations that arise from, and take into account, the specific context information in which these verbs are used.

Dominguez Vázquez tries to capture context and selection information by using Engel's (1996) 'relators'. For the verbs *abmelden* (2.32a) and *reinwaschen* (2.32b) in the class *verbs of removal, elimination or distance/difference* she claims that the meaning of the prepositional object is to add or relate categorical information to the accusative object. In the case of *abmelden* ('to resign'), the accusative object *sich* ('himself', as a reflexive pronoun referring to the subject of the sentence, *Kurt*) is "affected by the verbal action but not further influenced", abbreviated as AFFfer (Dominguez Vázquez (2005: 154)). The prepositional object has a categorial and/or relational meaning with regard to the accusative object by denoting a human institution/process, activity, in particular 'Event', abbreviated as [inst/akt: Veranstaltung] (Dominguez Vázquez (2005: 166f.)). The relation between the accusative object and the prepositional object is not explained; it seems that both the accusative object and the prepositional object together are claimed to be one 'relator', i.e. some kind of semantic role whose relation to the verb is not explained or specified. This model and method of grouping and labeling verbal arguments does not provide an explanatory advantage.

Another issue with Dominguez Vázquez (2005) is that the verbs of her individual groups exhibit diverging syntactic behavior, which is not accounted for by her analysis.

For example, both prepositions *aus* (‘out of’) and *von* (‘from’) as well another one, *bei* (‘at’) are possible in (2.32a), but not so in (2.32b-d). Note also, that (2.32d) is a metaphoric use of the verb *reinwaschen* (‘to clean something’) with restricted noun selection within the PP that places the whole phrase closer to idiomatic expressions than the other members of the group.

Dominguez Vázquez (2005: 229-247) also selects 23 German verbs that subcategorize for a prepositional object with *auf* (‘on’). These verbs are scattered over 11 of the 16 semantic groups. In all of these groups, except for one, the prepositional phrase headed by *auf* functions as the ‘relator’ AFFfer, i.e. the entity denoted by the prepositional phrase is “affected by the verbal action but not further influenced” (Dominguez Vázquez 2005: 154), sometimes with specific subcategorization information. The one group that does not match this pattern comprises the verbs of foundation, e.g. *stützen* (‘to lean on’) and *basieren* (‘to be based on’) where the PP is described as non-material locative ‘relator’. Although the preposition *auf* as argument marker seems to have a unified meaning or at least a similar function according to the ‘relator’ it denotes, the semantic description of AFFfer is too general to work as a constraint in verb-preposition combinations. The table summarizing the results of Dominguez Vázquez’ analyses (2005: 229-247) contains 188 verb-preposition combinations, 43 of which contain a prepositional phrase that is described with the relator AFFfer without more specific information. The following prepositions occur in these phrases: *an* (‘at’, 7 times), *auf* (‘on’, 7 times), *in* (‘in’, once), *mit* (‘with’, 13 times), *über* (‘over’, 8 times), *um* (‘around’, twice), and *von* (‘from’, 5 times). For example, consider the sentences in (2.33) that are based on two verbs from Dominguez Vázquez’ table.

(2.33) a. Karl hängt von seinen Eltern ab.
Karl.NOM depends from his parents.DAT PTCL
'Karl depends on his parents.'
b. Paula leidet an Kopfschmerzen.
Paula.NOM suffers at headaches. DAT
'Paula suffers from headaches.'

The examples in (2.32) and (2.33) show that Dominguez Vázquez' grouping of verbs according to semantic fields, as well as her treatment of the semantics of the prepositional phrases are not conclusive. In my view, it is not possible to predict the subcategorization pattern(s) of a verb based on its membership in one of the semantic groups that Dominguez Vázquez establishes. I also claim that it is not possible to draw conclusions regarding verb-PP_{auf} combinations from Dominguez Vázquez' semantic descriptions of the prepositional phrases because they are too general.

In summary, valency theory is very suitable for describing verbs and other lexical units separately and for showing parallels between preposition assignment and verbal meaning. It has been claimed that valency theory can incorporate idiosyncrasies very easily (Faulhaber 2011) because it focuses on individual verbs. However, it does not lend itself to finding and accounting for regularities in verb-preposition combinations. The newest contributions to valency theory explore the theory's capacities compared to the cognitively oriented Construction Grammar (Jacobs 2009, Welke 2009), which I discuss in the next chapter. Noteworthy in this context is the work by Engelberg et al. (2011), who conduct a corpus-based study of a syntactic pattern that they call "Such-Argumentstrukturmuster" ('search argument structure patterns') (Engelberg et al. 2011: 81). They conclude from their results that valency theory cannot account for all idiosyncrasies found in their data. In particular, the realization of arguments in German search argument structure patterns is not exclusively determined by the verb, which is the

governing and organizing head of the phrase according to valency theory (Engelberg et al. 2011: 105).

2.4 SUMMARY

In Chapter 2 I discussed various analyses of the meaning of the German preposition *auf* ('on'). Chapter 2.1 reviewed the descriptions of *auf* in seven German dictionaries and the extensive study of *auf* by Bouillon showing the discrepancies of these sources. Chapter 2.2 started with the review of the theory-neutral description of prepositional objects in German by Breindl (1989) with the result that her claims for verb-PP_{auf} combinations are not borne out and need a more detailed examination based on usage data. I continued by describing the status of prepositions and prepositional phrases in generative grammar (Chapter 2.2.2) focusing on Fillmore (1968), Rauh (1993) and Steinitz (1997), followed by studies of polysemy networks of prepositions within cognitive linguistics (2.2.3) discussing the work of Brugman (1981/88), Brugman and Lakoff (1987), Meex (2001) and Liamkina (2007). Both approaches were found unsuitable to account for verb-preposition combinations in a systematic way. Chapter 2.2.4 concluded the literature review by discussing approaches to the prepositional object within valency theory (Heringer 1968, Eroms 1981, 1991 and Dominguez Vázquez 2005). In the next chapter I introduce the theoretical framework of Construction Grammar (Goldberg 1995, 2006) and a constructional approach to prepositions as argument markers (Rostila 2007).

Chapter 3:

Prepositions as Argument Structure Constructions

3.1 INTRODUCTION

Construction Grammar (CxG, Fillmore and Kay 1993; Fillmore, Kay and O'Connor 1988; Kay and Fillmore 1999; Lakoff 1987; and Goldberg 1995/2006 among others) is a usage-based approach to linguistic structures that allows linguists to describe and to analyze in detail the form and meaning of linguistic items no matter how complex they are. Therefore, I employ CxG as the basis for my analysis of verb-PP_{auf} combinations. This chapter provides the necessary theoretical background for my analysis. I first introduce Goldberg's (1995, 2006) analysis of argument structure constructions, then I discuss Rostila's (2007) account of the preposition *auf* as a partially schematic argument structure construction. Finally, I introduce the theory of Frame Semantics (Fillmore 1985). This discussion will serve as a basis for the following chapters of my dissertation in which I test Rostila's claims regarding verb-*auf* combinations and provide a usage-based analysis of selected verbs that combine with *auf*.

3.2 CONSTRUCTION GRAMMAR

Construction Grammar (CxG) adopts de Saussure's notion of the linguistic sign as an arbitrary but conventionalized form-meaning pairing and extends it to grammatical structures (Hoffmann and Trousdale 2013: 1). It considers constructions "the basic units of language" (Goldberg 1995: 6). CxG developed out of Case Grammar (Fillmore 1968, 1977a) and Frame Semantics (Fillmore 1982, 1985), which "… together with Lakoff's (1987) account of existential constructions can be regarded as the foundation for the different versions of Construction Grammar found today" (Boas 2013a: 250). In this

section I focus on a particular version of CxG, namely Goldberg's approach to argument structure constructions, because it directly pertains to the verb-preposition combinations under investigation. This strand of Construction Grammar is called Cognitive Construction Grammar (CCxG) (Boas 2013a).

According to Goldberg (2006), constructions are defined as form-meaning correspondences which differ in internal complexity reaching from single lexical items over phrases to complete sentence patterns. In other words, every form-meaning pairing (every linguistic sign) is a construction in CxG. Examples of constructions of different complexity are given in Figure (3.1).

Figure 3.1: Examples of Constructions that Differ in Size and Complexity

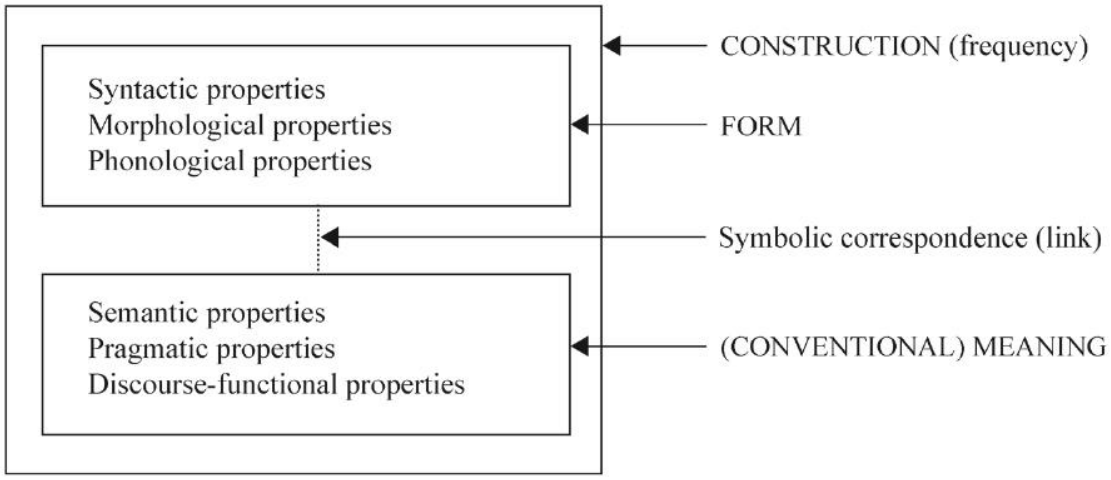
Morpheme	e.g. *pre-*, *-ing*
Word	e.g. *avocado*, *anaconda*, *and*
Complex word	e.g. *daredevil*, *shoo-in*
Complex word (partially filled)	e.g. [N-s] (for regular plurals)
Idiom (filled)	e.g. *going great guns*, *give the Devil his due*
Idiom (partially filled)	e.g. *jog* <someone's> *memory*, *send* <someone> *to the cleaners*
Covariational Conditional	The Xer the Yer (e.g. *the more you think about it, the less you understand*)
Ditransitive (double object)	Subj V Obj_1 Obj_2 (e.g. *he gave her a fish taco*; *he baked her a muffin*)
Passive	Subj aux VP_{pp} (PP_{by}) (e.g. *the armadillo was hit by a car*)

(cf. Goldberg 2006: 5)

From this view it follows that there is no separation between the core grammar of a language and the periphery, i.e. exceptions, idiomatic expressions or other non-compositional structures that do not conform to the core rules. The advantage of such a view is that the same theoretical principles are used to describe all constructions of a

language regardless of their degrees of abstraction and/or complexity. Another benefit of this approach is that all areas of a language can be described and analyzed within one theoretical framework (Croft and Cruse 2004, Boas 2011, Goldberg 1995, among others). The organization of language in terms of an interaction of many different constructions also entails that *"*… no strict division is assumed between lexicon and syntax" (Goldberg 1995: 7). Semantic, pragmatic, and syntactic information, together with world knowledge and other aspects of language and cognition are integrated in CxG "… in such a way that allows us to determine the extent to which the different kinds of information are related to and influence each other*"* (Boas 2003: 85). The CxG view of pairing linguistic forms with meanings/functions is illustrated in figure (3.2).

Figure 3.2: Relationship between Linguistic Form and Meaning in CxG



(cf. Croft 2001: 18)

Goldberg (1995: 1) argues for the existence of abstract argument structure constructions that "… exist independently of particular verbs. That is, it is argued that constructions themselves carry meaning, independently of the words in the sentence*"*.

One of her well-known examples is the English Caused-Motion construction X CAUSES Y TO MOVE Z (which is the formalized meaning component) that is syntactically realized as [SUBJ [V OBJ OBL]] as in figure (3.3). An example is *Pat sneezed the napkin off the table* (Goldberg 1995: 3). Goldberg's claim is that the highly abstract Caused-Motion construction is stored in the mental lexicon and imposes its meaning on any verb that is compatible with the construction's meaning. A verb is compatible with the construction's meaning if it "… is a member of a verb class that is conventionally associated with [this] construction …" (Goldberg 1995: 50). This view of argument structure constructions requires a process of connecting the abstract argument structure construction with the lexical material for actual language production. According to Goldberg (1995: 50), this process is the fusion of the argument roles contributed by the construction with the participant roles contributed by the verb.

The participant roles of the verb are frame-specific roles (Fillmore 1985) that apply only to a particular verb in a particular frame, e.g. the *sneezer* for the verb *to sneeze.* The lexical entries of verbs contain the participant roles and are visualized in Goldberg (1995) as in the following examples of *sneeze, put* and *mail:*

sneeze <**sneezer>**	(Goldberg 1995: 54)
put <**putter put.place puttee**>	(Goldberg 1995: 52)
mail <**mailer** mailee **mailed**>	(Goldberg 1995: 53)

The participant roles printed in boldface are profiled:

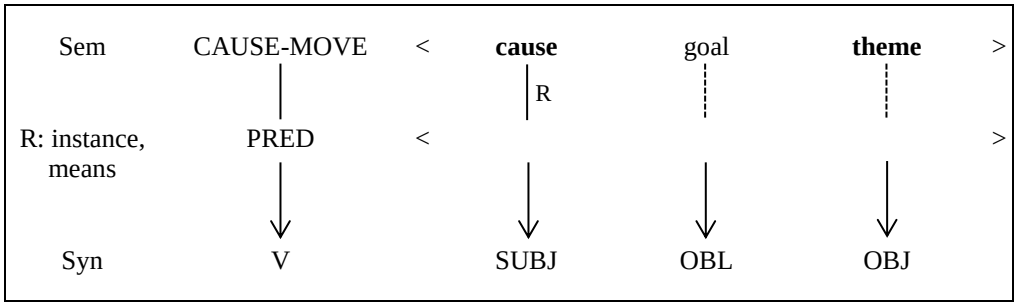
> Lexically profiled roles are entities in the frame semantics associated with the verb that are obligatorily accessed and function as focal points within the scene, achieving a special degree of prominence (Langacker 1987). These profiled participant roles correspond to those participants which are obligatorily brought into perspective, achieving a certain degree of "salience" (Fillmore 1977b). Profiling is lexically determined and highly conventionalized – it cannot be altered by context. (…) The test for profiled status that will be used here is that

> profiled participant roles are those roles which are normally obligatorily expressed in finite clauses (Goldberg 1995: 44f.).

In contrast to the participant roles of the verb, the argument roles of the construction are "…more general roles such as agent, patient, goal, which correspond roughly to Fillmore's early case roles or Gruber's thematic roles. Participant roles are instances of the more general argument roles and capture specific selectional restrictions as well" (Goldberg 1995: 43). The argument roles of a construction can be profiled as well, e.g. the goal and the theme role in the Caused-Motion construction in figure (3.3).

When participant roles of verbs fuse with argument roles of a construction, each profiled participant role of a verb must be fused with a profiled argument role of the construction according to the so-called *Correspondence Principle* of Goldberg (1995: 50) "… that is, all profiled participant roles must be accounted for by the construction". The *Semantic Coherence Principle* (Goldberg 1995: 50) constrains the mapping of the participant roles to the argument roles in that it requires them to be semantically compatible. If the participant roles of the verb are compatible with the more abstract argument roles of the construction or vice versa, the verb can be fused with the construction. Consider again Goldberg's Caused-Motion construction illustrated in figure (3.3).

Figure 3.3: Caused-Motion Construction

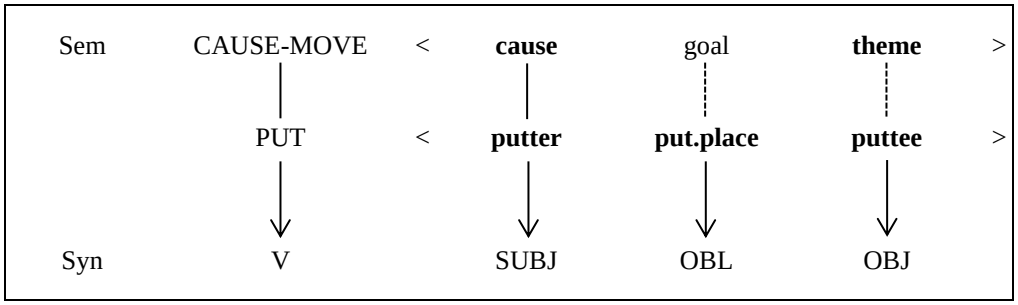


(cf. Goldberg 1995: 52)

The boxed diagram in figure (3.3) is to be read as follows: The Caused-Motion construction represented by the figure consists of three layers. The top layer of the box represents the meaning of the construction (Sem) containing its semantic arguments, the constructional roles 'cause', 'goal', and 'theme'. The relation of these arguments to each other is captured by the semantic description in the second column, 'CAUSE-MOVE' and reads 'X CAUSES Y TO MOVE Z'. The middle level of the construction symbolizes the room for the arguments of a predicate to fuse with the constructional roles. The lowest level contains the information how the semantic arguments of the construction are realized syntactically (SUBJ stands for subject, OBL stands for oblique, and OBJ stands for object). Solid lines from the semantic arguments downwards symbolize that the participant roles of an independently existing predicate must be fused with the semantic arguments. Dotted lines indicate that the construction can itself provide this argument, i.e. the predicate is required to have a corresponding participant role in its lexical entry. Semantic roles printed in bold face are "profiled arguments" that must be fused with a suitable participant role of the predicate, i.e. these semantic roles must be "… obligatorily accessed and function as focal points within the scene, achieving a special degree of prominence (Langacker 1987)" (Goldberg 1995: 44).

For example, the above mentioned Caused-Motion construction with the associated meaning 'X CAUSE Y to MOVE Z' has the three arguments CAUSE, THEME and GOAL. Verbs like *to put* have three participant roles, the putter, the puttee, and put.place, that are compatible with the three arguments of the construction which is illustrated in figure (3.4) and therefore participant and argument roles are fused.

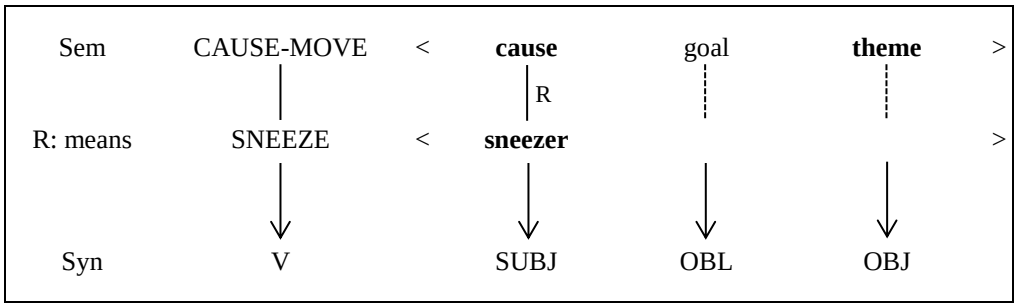
Figure 3.4: *Put* within the Caused-Motion Construction



(cf. Goldberg 1995: 50)

The intransitive verb *sneeze* has only one participant role in its lexical entry, the *sneezer*. According to Goldberg (1995: 53), this role can fuse with the CAUSE argument of the Caused-Motion construction, because the profiled participant role *sneezer* fuses with the semantically compatible profiled CAUSE role of the construction. This is illustrated in figure (3.5).

Figure 3.5: *Sneeze* within the Caused-Motion Construction



(cf. Goldberg 1995: 54)

In this view, the THEME and GOAL arguments are provided by the independently existing meaningful Caused-Motion construction that adds its caused-motion meaning together with the two roles to the verb *sneeze* in the fusion process. This process is called coercion. The advantage of this approach is that only a basic meaning needs to be stored in the mental lexicon, other verb senses come about by inserting the verb into different argument structure constructions (but see Boas 2003 for a critical review of Goldberg's position). I now review a constructional analysis of prepositional argument markers in German.

3.3 A CONSTRUCTIONAL APPROACH TO PREPOSITIONS AS ARGUMENT MARKERS

Rostila (2007) proposes to analyze prepositions in terms of abstract argument structure constructions as proposed by Goldberg (1995, 2006). His starting point is the observation that there are German verbs with similar meanings that select the same preposition to mark their arguments. Examples of verbs subcategorizing for a prepositional argument headed by *auf* ('on') from Rostila (2007: 130) are given in (3.1).

(3.1) a. Er wartet / hofft auf einen Börsensturz.
He.NOM waits / hopes on a market collapse.ACC
'He is waiting for / hopes for a market collapse.'

b. Er bereitet sich auf einen Börsensturz vor.
He.NOM prepares REFL on a market collapse.ACC PTCL
'He is preparing for a market collapse.'

c. Er macht sich auf einen Börsensturz gefasst.
He.NOM makes REFL on a market collapse.ACC collected.PTCP
'He is bracing himself for a market collapse.'

According to Rostila (2007: 130f.), the verbs in (3.1) are semantically similar in that they require a second argument besides the subject that has the meaning of 'future

event'. This argument is marked by the preposition *auf*. Rostila, however, does not discuss the syntactic differences of the sentences in (3.1) which, according to Goldberg (1995), constitute different constructions because their form is different. The verbs in (3.1a) are intransitive, non-reflexive, two-place verbs, while the verb in (3.1b) is reflexive and therefore a three-place verb that can also be used transitively when non-reflexive. In contrast, (3.1c) contains a light verb construction that requires a reflexive pronoun. These differences in form must be taken into account in an analysis within the framework of CxG because they could influence the selection of arguments and argument markers and therefore a thorough analysis of them needs to be included in the discussion of constructions containing prepositional argument markers. I provide such a discussion in Chapter 6.

The perceived semantic similarity of the sentences in (3.1) leads Rostila to conclude that the preposition *auf* as an argument marker can have the meaning *future event*, i.e. the preposition *auf* only has this meaning in combination with a governing verb. Based on Goldberg (1995: 2006), he proposes a distinct argument structure construction containing the preposition *auf* as in (3.2).

(3.2) AUF ‚FUTURE EVENT/PERSPECTIVE ROLE 2': 1. ___ AUF 2. ___

The architecture of Rostila's argument structure construction in (3.2) is to be read as follows: The preposition *auf* incorporates the role pair FUTURE EVENT/PERSPECTIVE ROLE 2 when it can be felicitously combined with a verb or predicate in slot 1 and a noun phrase in slot 2. FUTURE EVENT is Rostila's label for the semantic role of the noun phrase, which is marked by the preposition. 'Perspective role' refers to a concept of Welke (1993, 1994, 2001, 2002), who characterizes them as pragmatic roles. The number marks

the order in which the speaker focuses on the arguments of the verb and it often coincides with the linear order of the arguments in the sentence, i.e. the noun phrase marked by the preposition must be the second argument of the verb:

> Die mit der Abzählung als 1., 2., 3. Ergänzung intendierte Unterscheidung von Argumentrollen ist also eine pragmatische Rollenauffassung. Die Reihenfolge 1., 2., 3. Argument gibt die Reihenfolge wieder, in der der Sprecher die Argumente eines Verbes in den Blick nimmt. Sie entspricht daher häufig der linearen Reihenfolge der Argumente in der Normalstellung, vor allem der Tendenz, das Subjekt als 1. Argument in die Spitzenposition zu bringen (Welke 2001: 172).[56]

Rostila (2007: 137) provides an example of the *auf*-construction in (3.2) with the German cognition verb *hoffen* ('to hope'), which does not necessarily entail future orientation by itself, e.g. (3.3a)-(3.3b).

(3.3) a. Ich hoffe, es macht dir nichts aus.
I.NOM hope it makes you nothing PTCL
'I hope you don't mind.'

b. Ich hoffe, dass eure Reise schön war.
I.NOM hope that your trip.NOM nice was
'I hope you had a great trip.'

c. Ich hoffe auf deine Hilfe.
I.NOM hope on your help
'I hope for your help.'

If *hoffen* ('to hope') is embedded in the *auf*-construction (3.2) in slot 1, and the noun phrase *deine Hilfe* ('your help') in slot 2 as in (3.3c), then the meaning FUTURE EVENT/2 is assigned to the noun phrase and the verb *hoffen* is interpreted as pointing to the future, according to Rostila's construction. On this view, the future reading comes about by inserting the verb into the partially schematic *auf*-construction in (3.2), i.e. this

[56] "The differentiation of argument roles that is intended by numbering them as 1st, 2nd,, 3rd argument is a pragmatic view of [argument] roles. The order 1st, 2nd, 3rd argument reflects the order in which the speaker focuses on the arguments of a verb. This order, therefore, often corresponds to the linear order of the arguments in a normal [i.e. unmarked] sentence, particularly with regard to the tendency to place the subject as the first argument in the first position of the sentence" (Welke 2001: 172).

future oriented reading of *hoffen* does not need to be stored as a different verbal sense in the mental lexicon, but it is instead provided by the *auf*-construction. This idea is based on Goldberg's (1995) concept of an argument structure construction fusing with a semantically compatible verb. But consider the following examples.

(3.4) a. Ich bevorzuge (*auf) deine Hilfe.
I.NOM prefer (*on) your.SG help.ACC
'I prefer your help.'

b. Ich will (*auf) deine Hilfe.
I.NOM want (*on) your.SG help.ACC
'I want your help.'

c. Ich verstehe (*auf) deine Kritik
I.NOM unterstand (*on) your.SG criticism.ACC
/*deine Hilfe.
/*your.SG help.ACC
'I understand your criticism (*your help).'

In contrast to Goldberg (1995), Rostila (2007) does not explain the exact requirements for a successful fusion of a verb and a noun phrase with the *auf*-construction that must exist, since not every cognition verb can felicitously combine with the construction (cf. (3.4a)-(3.4c)). Furthermore, when looking at the verb *vorbereiten* ('to prepare') in (3.1b) it is not clear from Rostila's model how the participant roles of the transitive verb *vorbereiten<Vorbereiter, Vorbereitetes>* ('prepare<preparer, prepared>') are capable of fusing with the *auf*-construction to result in the three-place predicate *vorbereiten<Vorbereiter, Vorbereitetes, ZUKÜNFTIGES EREIGNIS/2>* ('prepare<preparer, prepared, *FUTURE EVENT/2*>') (cf. (3.5a)-(3.5h)). Also consider the positions of the prepositional phrases in (3.5).

(3.5) a. Ich bereite mich auf die Prüfung vor.
I. NOM prepare REFL on the exam.ACC PTCL
'I prepare myself for the exam.'

b. *Ich bereite auf die Prüfung mich vor.[57]
I. NOM prepare on the exam REFL PTCL
'I prepare for the exam myself.'

c. *Ich bereite auf die Prüfung vor.
I. NOM prepare on the exam.ACC PTCL
'I prepare for the exam.'

d. Ich bereite die Prüfung vor.
I.NOM prepare the exam.ACC PTCL
'I prepare the exam.'

e. Jogi. NOM bereitet die Mannschaft auf
Jogi. NOM prepares the team.ACC on
das Spiel vor.
the game.ACC PTCL
'Jogi prepares the team for the game.'

f. *Jogi bereitet auf das Spiel
Jogi. NOM prepares on the game.ACC
die Mannschaft vor.
the team.ACC PTCL
'Jogi prepares for the game the team.'

g. *Jogi bereitet auf das Spiel vor.
Jogi. NOM prepares on the game.ACC PTCL
'Jogi prepares for the game.'

h. Jogi bereitet das Spiel vor.
Jogi. NOM prepares the game.ACC PTCL
'Jogi prepares the game.'

The sentences in (3.5) show that the second argument of the verb *vorbereiten* ('to prepare') in all acceptable sentences is a direct object denoting a person that is being prepared for something or an event that is being prepared. The prepositional phrase denoting the FUTURE EVENT – if present – is the third argument. However, according to Rostila's *auf*-construction it should be in the second position, or the change of position would need to be accounted for otherwise. If the future event is the second perspective role (in linear order) it cannot be marked with the preposition *auf* (cf. (3.5b)-(3.5c) and (3.5f)-(3.5g)). Instead, it must be marked with the bare accusative case, as can be seen in (3.5d) and (3.5h), which either means that these sentences are not instances of Rostila's

[57] In the right context, this constituent order works. There is a special intonation construction that can override the default characteristics of a declarative sentence construction (Välimaa-Blum 2005).

auf-construction in (3.2) or that the incorporation of perspective roles into the argument structure construction *auf* does not work.

Note also that there is a significant meaning difference between the sentences with prepositional object (cf. (3.5a), (3.5e)) and those in which the future event is the direct object (cf. (3.5d), (3.5h)). According to the traditional definition (e.g. Trask 1992: 278), the direct objects in (3.5d) and (3.5h) are expected to carry the semantic role THEME. However, Rostila's semantic role FUTURE EVENT, which he assigns to the prepositional phrase, is not part of the traditional lists of semantic roles and it is not clear how it relates to the established semantic roles in this context. It might be an instantiation of the role GOAL, but a clear, principled approach to the semantics of the phrases is needed in order to be able to characterize the meaning and function of different verbal arguments as well as to compare the PP_{auf} in combination with different verbs. To overcome these problems, I adopt the main insights of Frame Semantics[58] for the semantic description of the verb-PP_{auf} combinations since this framework presents a detailed theory of word meanings that is tightly connected to CCxG and routinely used to describe and analyze constructions (Boas 2013b: 10). The frame-semantic approach to analyzing lexical meanings is more detailed than Rostila's (2007: 41), who regards semantic roles as semantically relative general roles that are generalizations over the participant roles of verbs.[59] In addition, Rostila, in contrast to other accounts employing the insights of Frame Semantics, does not explain the method that he employs to arrive at his generalizations, i.e. at the generalized semantic roles and their exact status.

[58] I discuss Frame Semantics in more detail in Chapter 3.3.

[59] „Unter semantischer Rolle verstehe ich im engen Sinn semantisch relative allgemeine Rollen, die Generalisierungen über die bei einzelnen Prädikatsköpfen vorkommenden Rollen, Partizipantenrollen, darstellen." (Rostila 2007: 41). ("As semantic roles I understand relatively general roles that are generalizations of participant roles of particular verbs").

Comparing Rostila's semantic role FUTURE EVENT to the more traditional semantic roles AGENT, PATIENT, THEME, GOAL etc. reveals a crucial difference in the level of abstraction that calls into question Rostila's labeling as well as the level of granularity of his semantic roles. Whereas it is unclear which semantic role from the traditional role set should be assigned to the prepositional phrases in (3.5a) and (3.5e),[60] the direct objects phrases in (3.5d) and (3.5h) are THEMES. Yet at the same time they are also FUTURE EVENTS in Rostila's unrestricted sense and do not allow for the preposition *auf* to occur. An additional problem is that there are more verbs that subcategorize for an argument which can be labeled as FUTURE EVENT but do not allow for a prepositional marking with *auf*. Examples are given in (3.6).

(3.6) a. Max plant (*auf) seinen Sommerurlaub.
Max.NOM plans (*on) his summer vacation
'Max plans his summer vacation.'

b. Silvia sehnt (*auf) das Monatsende herbei.
Silvia.NOM yearns (*on) the end of the month PTCL
'Silvia yearns for the end of the month.'

c. Caroline erwartet (*auf) den Besuch ihrer Tante.
Caroline.NOM expects (*on) the visit her aunt.GEN
'Caroline expects the visit of her aunt.'

d. Ihm steht (*auf) ein langer Prozess bevor.
he.DAT stands (*on) a long lawsuit.NOM PTCL
'A long lawsuit is ahead of him.'

The examples in (3.5) and (3.6) show that the role pair 'FUTURE EVENT/(perspective role) 2' in the construction postulated by Rostila in (3.2) does not adequately capture the situation in German. There are verbs in German that express the meaning 'future event' without subcategorizing for a prepositional argument marked by *auf*, such as *planen* ('to plan'), *sich sehnen nach etwas* ('to yearn for something'), *erwarten* ('to expect'), or *bevorstehen* ('to lay ahead') (cf. 3.6). Also, Rostila does not

[60] It could be argued that 'the exam' and 'the championship' denote endpoints of the action denoted by the verb. If that is true, than the appropriate semantic role is GOAL.

suggest any constraints on the verb, on the other verbal arguments, or on the object of the preposition to determine the scope of his construction. Semantic role labeling, even if combined with the concept of perspective roles, is not sufficient to account for the distribution of prepositional arguments with *auf* because it leads to overgeneralization of his proposed construction. In contrast to Goldberg (1995), Rostila (2007: 177-179) claims that only the pragmatic constraints based on Grice's (1975) maxims apply to constrain his construction:

> Ich schlage vor, dass jede Fusionierungsoperation einen Vorschlag oder eine Behauptung von Seiten des Sprachbenutzers darstellt, dass ein bestimmter Inhalt auf eine bestimmte Weise aufgefasst werden kann. (...) Der Vorschlag des Sprachbenutzers hat desto größere Chancen, angenommen zu werden – und der Sprachbenutzer desto größere Chancen, verstanden zu werden - , je nachvollziehbarer der Vorschlag für den Empfänger ist. (...) Es steht im Ermessen des Sprachbenutzers, wie er Verben mit A[rgument]-Strukturkonstruktionen kombiniert, solange solche Kombinationen für den Hörer nur nachvollziehbar sind (Rostila 2007: 177-179).[61]

Using Grice's maxims to constrain the fusion of verbs with Rostila's *auf*-construction is clearly not sufficient to capture the linguistic reality in German, as demonstrated by the examples above.

Another important point of Rostila's analysis is the claim that his argument structure construction is productive, by which he means it can be used freely by German speakers to create novel combinations of verbs with the preposition *auf* to express the meaning 'future event'.[62] Based on Goldberg's (1995) proposals, he introduces his

[61] "I suggest that every fusion operation is the proposal of the language user that a particular content can be interpreted in a particular way. (…) The more transparent the proposal of the language user is for the recipient of the utterance, the bigger are the chances for its acceptance – and the bigger are also the chances of the speaker to be understood by the intended recipient. (…) The way of combining verbs with argument structure construction is at the discretion of the language user as long as such combinations are comprehendible by the recipient" (Rostila 2007: 177-179).

[62] This 'definition' of productivity of Rostila would fall into the EXTENSIBILY concept of syntactic productivity of Barðdal (2008: 29).

construction as a partially schematic argument structure construction. For convenience, (3.2) is repeated here as (3.7).

(3.7) AUF ‚FUTURE EVENT/PERSPECTIVE ROLE 2': 1. ___ AUF 2. ___

'Partially schematic' means that the construction is highly abstract by having two slots defined only by categories (slot 1 needs to be filled with a verb, slot 2 with a noun phrase), but it also contains concrete lexical material, namely the preposition *auf*. Following Goldberg (1995), Rostila (2007) assumes that such constructions are psychologically real, i.e. speakers of German have them stored in their mental lexicon. Accordingly, the verb must fuse with the construction parallel to Goldberg's postulated fusion processes discussed in section 3.1 above. Rostila (2007: 176) proposes that fusion applies the same way in his analysis: the *auf*-construction in (3.8d) below fuses with a verb and thereby coerces the novel meaning out of the verb. As a result, the subject of the verb should also be interpreted differently, i.e. as a future-oriented person or entity. Rostila supports his proposal with the verb *sich freuen* ('to be happy'), which expresses a mental state of the subject as a reaction to a stimulus as shown in (3.8),[63] but only the combination of *sich freuen* with the preposition *auf* in (3.8d) yields a future-oriented reading.

(3.8) a. Gunther freut sich.
Gunther.NOM is-happy REFL
'Gunter is happy.'

b. Annett freut sich über die Blumen.
Annett.NOM is-happy REFL over the flowers.ACC
'Annett is happy about the flowers.'

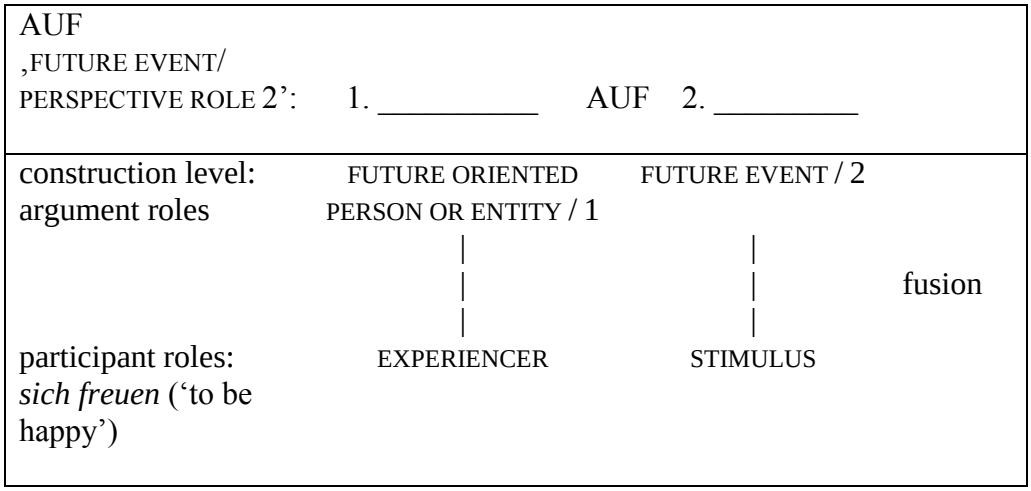
[63] The sentences in (27) are my example sentences to illustrate Rostila's discussion of the verb *sich freuen* ('to be happy'); Rostila (2007) does not provide example sentences with this verb in its different usages, i.e. with different oblique objects.

c. Die Gäste freuen sich an den Kunstwerken.
The guests.NOM are-happy REFL at the artwork.DAT
'The guests enjoy the artwork.'

d. Falko freut sich auf Weihnachten.
Falko.NOM looks-forward REFL on Christmas.ACC
'Falko is looking forward to Christmas.'

Rostila argues that this meaning modification is due to the fusion of the argument roles of the *auf*-construction with the participant roles of the verb *sich freuen* ('to be happy'), which he formulates as follows.

Figure 3.6: The *auf*-Construction according to Rostila (2007)



Rostila (2007: 176)

Rostila (2007: 130f.) argues that the verb-preposition combinations in (3.9) are proof of the productivity of his argument structure construction in figure (3.6).

(3.9) a. Er richtet sich auf einen langen Aufenthalt ein.
he.NOM gets-ready REFL on a long stay.ACC PTCL
'He is getting ready for a long stay.'

b. Ich brenne darauf zu erfahren,
I.NOM burn there.ADV-r-on.PREP to know.INF
wie die Geschichte weitergeht.
how the story.NOM continues
'I am dying to know how the story continues.'

c. Er sinnt auf Revanche.
he.NOM seeks on revenge.ACC
'He is seeking revenge.'

d. Jedes Machtsystem ist darauf
every power system.NOM is there.ADV-r-on.PREP
ausgerichtet, zu verwirren
geared-up.PTCP to confuse.INF
'Every power system is geared up to confuse.'

e. Der Druckbehälter ist auf 85 psi ausgelegt.
the container.NOM is on 85 psi designed.PTCP
'The container is designed for a pressure of 85 psi.'

f. Die diplomatischen Bemühungen zielen auf
the diplomatic efforts.NOM aim on
die Beendingung des Krieges
the ending.ACC the war.GEN
'The goal of the diplomatic efforts is to end the war.'

g. Wurde an der Börse auf die Anschläge
AUX.PST on the stock market.ACC on the attacks.ACC
spekuliert?
speculated.PTCP
'Where there speculations for the attacks on the stock market?'

h. Der Trainer schwört sein Team auf
the coach.NOM swears his team.ACC on
den Sieg ein.
the win.ACC PTCL
'The coach gets his team to commit to the win.

i. Er lässt sich auf ein Abenteuer ein.
he.NOM engages REFL on an adventure.ACC PTCL
'He participates in an adventure.'

j. Ich verlasse mich ganz auf dich.
I.NOM rely REFL completely on you.ACC
'I completely rely on you.'

k. Niemand sagte etwas auf ihre Frage.
nobody.NOM said anything on her question.ACC
'Nobody said anything following her question.'

l. Ich lag lange auf den Tod.[64]
I.NOM laid long on the death.ACC
'I was critically ill.'

m. Die Soldaten aßen auf Vorrat.
the soldiers.NOM ate on reserve.ACC
'The soldiers ate to have a reserve for later.'

n. Sie rudern auf Angriff.
they.NOM row on attack.ACC
'They row attacking the opponent.'

o. Der Mann heiratete die alte Witwe
the man.NOM married the old widow.ACC
auf Abbruch.
on break-off.ACC
'The man married the rich old widow in anticipation of her quick death.'

Note, however, that these sentences are very heterogeneous in meaning. A close inspection of the verbs in (3.9) raises doubts that the interpretation in these sentences is licensed by a successful fusion of their "basic verb senses" with Rostila's *auf*-construction in figure (3.6). The process suggested by Rostila (2007) requires that these predicates should either be an instance of the *auf*-construction parallel to Goldberg's analysis of the verb *to put* in the Caused-Motion construction (cf. figure 3.3), or the construction should add the prepositional phrase and provide the future reading of the sentence. For illustration, consider the following examples.

(3.10) a. Er richtet sich ein.
he.NOM furnishes.(apartment) REFL PTCL
'He furnishes his apartment.'

b. Er richtet sich auf einen langen Aufenthalt ein.
he.NOM gets-ready REFL on a long stay.ACC PTCL
'He is getting ready for a long stay.'

[64] Rostila took this sentence from a historic novel where it is used for stylistic reasons. This expression is not used in contemporary German. According to Adelung (1793-1801: 612f.), it means to be critically or mortally ill.

According to Rostila (2007), we would expect that the verb *sich einrichten* ('to furnish' or 'to decorate' one's living quarters) in (3.10a) is the basic verb, which by combining with the *auf*-construction will be interpreted as 'to furnish or decorate for a future event'. The meaning of (3.10b), which, following Rostila (2007), should be the result of the fusion with the *auf*-construction, however, is different. The verb *sich einrichten* in (3.10b) means that the grammatical subject prepares itself for a future event or a longer period of time, physically or mentally. Furnishing or decorating could be part of the preparation but the default interpretation (without other context information) does not include the basic verb meaning at all. Therefore, I argue that the verbs in (3.10) constitute different, possibly related senses of the verb, and the sense in (3.10b) subcategorizes for a prepositional object headed by *auf*. Thus, Rostila's *auf*-construction cannot be used to explain the subcategorization pattern in (3.10b). Accordingly, all verbs and constructions containing such an oblique object would have to be carefully analyzed in detail in order to find out whether or not the attachment of the prepositional phrases are the result of the fusion of a base verb with Rostila's (2007) *auf*-construction or if these argument constructions are entirely different. I analyze such verbs in Chapter 5 and 6.

Another issue with Rostila's account is that it is not evident that the prepositional phrase encodes the meaning 'future event' in all sentences. Note that the verbs belong to quite different semantic subclasses. A comparison of the cognition verbs in (3.11a)-(3.11c) and (3.11f) show that they clearly exhibit a future meaning component. However, not all verbs or predicates with similar meanings can occur with the preposition *auf* and its implied shift in meaning.

(3.11) a. Er richtet sich/ *macht sich bereit/ *rüstet sich
he.NOM installs REFL / makes REFL ready/ equips REFL
auf einen langen Aufenthalt ein.
on a long stay.ACC PTCL
'He is getting ready for a long stay.'

b. Ich brenne/ *schwele/ *flackere/ *glimme/ *glühe
I.NOM burn/ smolder/ flicker/ glimmer/ glow
darauf zu erfahren,
there.ADV-r-on.PREP to know.INF
wie die Geschichte weitergeht.
how the story.NOM continues
'I am dying to know how the story continues.'

c. Er sinnt/ *denkt/ *trachtet auf Revanche.
he.NOM muses/ thinks/ strives on revenge.ACC
'He is seeking revenge.'

d. Die diplomatischen Bemühungen zielen/ *visieren/ *peilen
the diplomatic efforts.NOM aim sight home on
auf die Beendingung des Krieges.
on the ending.ACC the war.GEN
'The goal of the diplomatic efforts is to end the war.'

The examples in (3.11) run counter to Rostila's analysis, because they show that the *auf*-construction does not freely combine with any verb that is semantically compatible to create the novel meaning 'future event'. Otherwise it should be possible to use near synonyms of the verbs with the preposition *auf* to yield the same meaning. In my view, the prepositional phrases in (3.9d)-(3.9e) and (3.9g)-(3.9n) do not encode a future meaning. In (3.9h), for instance, the future interpretation is carried by the meaning of the noun within the PP and it disappears when a noun without future meaning is substituted (cf. 3.12).

(3.12) Der Trainer schwört sein Team auf den Sieg/
the coach.NOM swears his team on the win/
auf gemeinsame Werte ein.
on shared values PTCL
'The coach gets his team to commit to the win/ to shared values.'

Another problem related to the data is that (3.9l) contains a use of the verb *liegen* ('to lie') that is not used anymore today. Its meaning is not evident to the contemporary

German speaker and it cannot serve as an example of a productive, i.e. transparent use of the construction. Similarly, (3.9m-o) also contain idiomatic phrases which pose additional constraints: the noun in the prepositional phrase cannot be replaced; it must be singular and cannot be preceded by an article, as the following examples illustrate.

(3.13) a. Die Soldaten aßen auf (*den) Vorrat/ *Vorräte/ *Gesundheit/ *Gewichtszunahme.
the soldiers.NOM ate on (the) reserve/ reserves/ health/ weight gain
'The soldiers ate to have a reserve (for later)/*for health/*weight gain.'

b. Sie rudern auf (*den) Angriff/ *Angriffe.
they.NOM row on (the) attack/ attacks
'They row attacking the opponent.'

c. Der Mann heiratete die alte Witwe auf Abbruch/ *Scheidung/ *Liebe.
the man.NOM married die old widow on break-off/ divorce/ love
'The man married the rich old widow in anticipation of her quick death/*divorce/*love.'

These counter-examples show that the argument structure construction proposed by Rostila (2007) cannot adequately account for the distribution of the preposition *auf* as an argument marker in German. In my view, Rostila arrives at his analysis by employing a top-down approach without analyzing larger amounts of empirical data. Such approaches focus on discovering and describing general rules of language "… as a more or less fixed system, which can be studied independently of context and use and independently of its interactions with other aspects of cognition" (Kemmer and Barlow 2000: viii). In recent years, however, it has been shown that the general rules often cannot fully predict the patterns found in actual language production (e.g. Boas 2003 for resultative constructions and Iwata 2008 for the locative alternation). Instead, many studies reveal that the emergence and change of linguistic structures on all levels are

tightly connected to language use. See, e.g., Berkenfield (2001), Bybee (1994, 2000) and Pierrehumbert (2001) for emergent patterns at the phonological level, Bybee (1995) for morphology, Hallan (2000) for the acquisition of English prepositions, Barlow (2000) for emerging structures at the phrase level, etc. Moreover, by ignoring broader patterns of language use, important facts about and regularities of language can be missed because they escape the researcher working only with an introspective method: "What is just now coming to be realized is how extensive and systematic the patterns of language use are. Such … patterns are well beyond the access of intuitions, and yet these patterns are much too systematic to be disregarded as accidental" (Biber 2000: 290).

These points lead me to adopt a usage-based approach (Barlow & Kemmer 2000, Langacker 2000) for the analysis of verb-PP_{auf} combinations in German. I take Rostila's (2007) proposal of a partially schematic argument structure construction headed by *auf* as a hypothesis that I test in Chapter 5 based on corpus data. In Chapter 6 I propose my alternative bottom-up approach showing how a usage-based constructional analysis can account for the distribution of verb-PP_{auf} combinations more effectively.

3.4 FRAME SEMANTICS

A central point in the analysis of verb-PP_{auf} combinations is to determine the meaning of the prepositional phrase. As I showed in this chapter, Rostila (2007) does not define the criteria he used to arrive at the meaning of his proposed *auf* construction as "future orientation" and the meaning of the PP_{auf} as "future event". Construction Grammar, however, is in fact tightly connected to a semantic theory that can be employed to describe the meaning of words and constructions. This is the theory of Frame

Semantics (Fillmore 1982, Fillmore 1985), to which I will turn in my network analysis in chapter 6.

Frame Semantics is an empirical theory that emphasizes the fact that linguistic concepts are embedded in cultural and world knowledge. A frame, according to Petruck (1996: 1), "… is any system of concepts related in such a way that to understand any one concept it is necessary to understand the entire system; introducing any one concept results in all of them becoming available. In Frame Semantics, a word represents a category of experience." For example, the verbs *buy*, *pay*, *spend*, and *cost* can only be understood if one knows about the extra-linguistic transactions in the real world they refer to. This background knowledge that is necessary for the understanding of these words is modeled in the semantic frame; the verbs in this example are understood against the background of the Commercial Transaction Frame. This means that the members of our culture know what is happening when one buys or sells something, they know that money is needed to pay for goods and that the goods will change hands only after the money has been received by the seller. These elements of the `Commercial Transaction` frame, the money, the buyer, the seller, and the goods among others are therefore called frame elements (FEs), they are situational roles in contrast to the more abstract, general semantic roles that are prevalent in other semantic theories. The idea of Frame Semantics is that once one of the words used to refer to the commercial transactions is activated, all of them become available because the concepts they encode belong all to the same cultural scenario. Frame Semantics models these cognitive processes; in frame semantics terminology, the lexical units are said to evoke the frame (in the mind of the speaker/hearer).

These words do not have the same meaning; instead, each of them evokes different aspects of the frame. For instance, *to buy* is concerned with the buyer and the

goods, the seller does not receive the same emphasis; *to pay* focuses on the money, the buyer, and the seller but not so much on the goods, i.e. each word puts the commercial transactions in a particular perspective, foregrounding and backgrounding different frame elements which are networked together based on the common background they have.

In order to make a frame a suitable model for capturing cultural and world knowledge, Frame Semantics relies on the notion of prototype "…understood as a fairly large slice of the surrounding culture against which the meaning of a word is defined and understood" (Petruck 1996: 3). Consider the word *breakfast* which can only be understood based on our cultural practices, i.e. to take in food several times a day, usually or ideally at the same time with particular menus for each meal. The prototypical *breakfast* is the first meal in the day, after a long period of sleep, and it has a special menu. However, the word *breakfast* can also be used in other situations: e.g. eating eggs and drinking coffee at two in the afternoon after sleeping in, or staying up all night and eating something at seven in the morning; or take the famous All-day English breakfast served all day in English pubs and in cans in the supermarket. The prototype notion can capture all these meanings as variants of a prototype, more or less identical, i.e. closely related to the prototypical situation the word was coined for.

Frame Semantics as described so far differs from other approaches to word meaning, for instance from the checklist theory of meaning (Fillmore 1975) where the meaning of a word is represented as a checklist of conditions that need to be satisfied in order to be used appropriately or truthfully.[65] This approach is not applicable to describing the meaning of verb-PP$_{auf}$ combinations. As we have seen in the discussion of

[65] Frame Semantics also differs from Field Theory where the meaning of words is described with regard to their relation to other words which integrates world knowledge only implicitly. Field Theory relates to the extra-linguistic meaning portion of the word by grouping words together based on the underlying similarity of referring to a shared area of experience.

the dictionary accounts for the preposition *auf* in chapter 2, there is no checklist available for the preposition *auf* and hence it cannot be applied to analyze the meaning of the PP. The discussion of Rostila (2007) revealed the same problem: his definition of the *auf* construction does not include a clear meaning description and is, therefore too vague. Furthermore, it is not clear how the meanings of the two lexical units, the verb and *auf*, relate to each other and how that relationship can be determined and captured by a checklist theory.

Frame Semantics can address these problems since it characterizes word meaning "…in terms of experience-based schematizations of the speaker's world -- i.e. frames which impose order on prototypes" (Petruck 1996: 5). The Frame Semantics approach to meaning makes it possible to describe the meanings of the prepositional phrases in terms of frame elements. The frame specific definition of these frame elements do not only provide a very detailed description of the PP_{auf} based on the information that the frame provides about prototypical usage situations, it also specifies the relation of the PP_{auf} to the verb that evokes the frame. Therefore, Frame Semantics is a suitable semantic theory to approach the meaning of verb-PP_{auf} combinations, and I rely on it in my network analysis in chapter 6. How exactly the frames relate to each other is an empirical question that I address in detail in chapter 6 when I introduce FrameNet (Fillmore & Baker 2010), the lexical database developed on the theoretical principles of Frame Semantics.

3.5 SUMMARY

In this chapter I first introduced the general principles of Construction Grammar and Goldberg's (1995) concept of argument structure constructions in particular. Then, I examined Rostila's (2007) constructional approach to prepositions as argument markers

in German in which he proposes a partially schematic argument structure construction for the preposition *auf*. Based on a larger array of data, I demonstrated that Rostila's (2007) *auf*-construction is too general and unspecific to account for all the data. In the last part I introduced Frame Semantics as the theoretical model of word meaning that I will rely on in my network analysis in chapter 6. In the next chapter I discuss the theoretical basis for my own case studies and introduce the corpora and methods I employ in chapters 5 and 6.

Chapter 4:

Methodology and Corpora

4.1 INTRODUCTION

My dissertation investigates Rostila's (2007) proposed argument structure construction headed by *auf* to determine whether it is really an independently existing productive construction, or whether the combinations of *auf* with verbs are idiosyncratic and must therefore be recorded in the lexicon. In contrast to Rostila (2007), who does not employ corpus data, I pursue this question following a usage-based approach (Kemmer and Barlow 2000). In this chapter I first describe the principles of usage-based linguistic analyses and the role of corpus studies. Following the theoretical introduction, I describe the corpora and methods used to arrive at the list of verb-PP_{auf} combinations that provides the data for the following corpus studies.

Rostila's (2007) *auf*-construction has the status of an independently existing form-meaning pairing (e.g. Bybee 2013, Kemmer and Barlow 2000), meaning that it can only emerge from and be present in usage events by particular users in particular contexts. It is therefore necessary to investigate in detail how verb-PP_{auf} combinations are distributed in a broader range of contexts in order to describe and evaluate this pattern with regard to its semantic interpretation. For this task I employ a corpus-linguistic methodology, as described by Biber et al. (1998):

> Finding patterns of use and analyzing contextual factors can present difficult methodological challenges. Because we are looking for typical patterns, analyses cannot rely on intuitions or anecdotal evidence. In many cases, humans tend to notice unusual occurrences more than typical occurrences, and therefore conclusions based on intuition can be unreliable. Furthermore, we need to analyze a large amount of language collected from many speakers, to make sure that we are not basing conclusions on a few speakers' idiosyncrasies (Biber, Conrad and Reppen 1998: 3).

Furthermore, frequency is an important factor in explaining the emergence of patterns in a usage-based approach. Higher frequency of a usage pattern leads to a greater degree of cognitive routinization[66] suggesting, that if there is indeed an argument structure construction headed by *auf* as proposed by Rostila (2007), then we are most likely to find it when looking at verbs that frequently occur with the preposition *auf* as an argument marker. I therefore start my analysis with the extraction of the most frequent verbs that combine with *auf*.

In the next section I describe the corpora and methods used to compile the data the analyses here are based on.

4.2 CORPORA AND CORPUS ANALYSIS

I relied on two corpora: the parsed "IMS-DeWaC" corpus[67] from the *Institut für Maschinelle Sprachverarbeitung* (IMS) at the University of Stuttgart and the "Deutsches Referenzkorpus"[68] (DeReKo, 'German Reference Corpus') developed and hosted by the "Institut für Deutsche Sprache" (IDS, 'Institute for German Language') in Mannheim. First, I employed the IMS-DeWaC corpus[69] of about 875 million words to extract the list of verbs that subcategorize for a PP_{auf} argument.[70] The goal of this step was to identify all

66 Langacker (1987, 2000) refers to this process as "entrenchment."

67 This cleaned and parsed corpus is not publicly available. I thank Sabine Schulte im Walde for allowing me to use the corpus and granting me access to the file.

68 This collection of corpora is also referred to by other names, e.g. *Mannheimer Korpora*, *IDS-Korpora*, *COSMAS-Korpora*, *Archiv der Korpora geschriebener Gegenwartssprache am IDS* ('Archive of the corpora of written contemporary language at the IDS').

69 The IMS-DeWaC corpus was developed from the DeWaC German Web Corpus (Baroni and Kilgarriff 2006), which is part-of-speech tagged and lemmatized with Tree-tagger (Schmid 1994, 1995). It was cleaned (Faaß et al. 2010) and parsed at the in *Institut für Maschinelle Sprachverarbeitung* (IMS) at the University of Stuttgart using the parser FSPar (Schiehlen 2003).

70 There is no comprehensive and generally accepted list of German verbs that subcategorize for prepositional phrase arguments. See also Storrer (1996: 227), who examined the description of subcategorization frames of German verbs in three dictionaries. She found that 20% of the verbs were not consistently classified regarding their subcategorization patterns.

potential instances of the *auf*-construction. By using the IMS-DeWaC I was able to select the verbs for the case studies based on frequency while at the same time making sure that the examined verb-*auf* combinations actually occur in corpus data. For this task I needed a syntactically parsed corpus that distinguishes between adverbial PPs and subcategorized PPs in order to exclude local, temporal and other adverbial uses. However, a parser cannot always reliably distinguish between subcategorized and non-subcategorized prepositional phrases (Volk 2001, 2006a, 2006b)[71] and therefore a certain error rate was to be expected. The alternative, however, was to presort the occurrences of verb+PP_{auf} in a large corpus manually in order to filter out all adverbial PPs headed by *auf*, which would have been unfeasible in practical terms.

From the IMS-DeWaC I extracted all verbs that occur with a possibly subcategorized prepositional phrase headed by *auf* ('on')[72] and created an ordered frequency list resulting in 757,388 verb occurrences (tokens) distributed over 7,303 verbs (types). For this extraction process I used the programming language Python, a general-purpose high-level programming language. An excerpt of the list with the 20 most frequent verbs is given in table 4.1.[73] Since the parser does not reliably distinguish between dative and accusative governed prepositions, all verbs that can potentially

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[71] FSPar explicitly states these ambiguities in cases where the syntactic function of the PP is not completely clear.

[72] The cascaded finite state parser FSPar (Schielen 2003) is widely used but not well documented. Therefore, I cannot report the criteria on which the selection of prepositional phrases as subcategorized by the verb ("PP/auf:4": subcategorized PP_{auf} governing the dative case, "PP/auf:8": subcategorized PP_{auf} governing the accusative case) versus not governed adverbials ("ADJ": adjunct) is based. Furthermore, the parser explicitly includes ambiguities regarding the status of the prepositional phrase if it could not assign one function (displayed as e.g. "ADJ|PP/auf:8") (Schulte im Walde, personal conversation 10/25/2011). I decided to include all the PPs with *auf* that the parser marked as potentially subcategorized, i.e. all "ADJ|PP/auf" phrases because most PPs are ambiguously labeled as adjunct and complement. The search for unambigiously marked complement phrases only did not return enough data to serve as a sufficient basis for the study (e.g. the verb *warten auf* ('to wait for') was not returned in the search for only complements). Unambigiously marked adjunct PPs ("[ADJ]+auf") were excluded.

[73] The entire verb list is over 140 pages and is therefore not included in this dissertation.

combine with the PP_{auf} are sampled together in Table 4.1, regardless of the case they govern.

Table 4.1: The 20 most Frequent Verbs Occurring with PP_{auf} in the IMS-DeWaC Corpus

German verb (infinitive)	**Frequency in IMS-DeWaC**	**English translation**
kommen	28,144	'to come'
setzen	27,854	'to put, set'
verzichten	25,616	'to disclaim', 'to pass on sth.'
beziehen	20,162	'to refer to'
bringen	19,535	'to take'
beschränken	19,503	'to confine, limit'
hin#weisen[74]	19,377	'to point to sth.', 'to indicate'
beruhen	18,849	'to be based on sth.'
reagieren	18,758	'to react to sth.'
stoßen	17,748	'to come across sth.'
konzentrieren	16,935	'to concentrate on sth.'
warten	15,094	'to wait'
stellen	14,518	'to put, place'
verweisen	13,508	'to refer to sth.'
basieren	13,366	'to be based on sth.'
ein#gehen	13,083	'to agree to sth.'
vor#bereiten	12,202	'to prepare'
zurück#führen	10,715	'to attribute sth. to s.o./sth.'
aus#wirken	10,475	'to affect'
befinden	10,061	'to be located'

Next, I examined this verb list with regard to the status of the prepositional phrases. Some of the verbs commonly occur in combination with *auf*, e.g. *verzichten auf*

[74] Separable prefix verbs, i.e. verbs consisting of a verb stem and a prefix that in some conjugation forms (e.g. present tense conjugation) are separated from the verb stem, are marked in the corpus by the sign '#' following the separable prefix.

(‘to disclaim, to pass on sth.’), *warten auf* (‘to wait for’), and *beruhen auf* (‘to be based on’). Other verbs seem to foremost express location or direction, e.g. *bringen* (‘to take’) and *stellen* (‘to place’), giving the prepositional phrase an adverbial meaning and placing it outside the scope of this study. Other verbs are used in so many different contexts, e.g. *kommen* (‘to come’) which makes it difficult to evaluate all of their subcategorization frames based on my native-speaker intuitions alone. I therefore checked the verb list manually to choose all verbs that subcategorize for PP_{auf}. I based my decision on two German dictionaries: the E-VALBU and the DWDS.[75] The resulting verb lists form the data basis for my own analysis is found in Chapters 5 and 6.

The E-VALBU is devoted to providing the user with information about different verb senses and subcategorization information. Therefore, if a verb is catalogued by E-VALBU I based my selection decision on this dictionary; if the E-VALBU does not contain a verb from my list, I consulted the DWDS, which is even more comprehensive than E-VALBU but it does not focus on recording and analyzing valence patterns. I provide an example of the selection procedure for the E-VALBU; the procedure using the DWDS is similar and therefore not described here in detail.

E-VALBU,[76] “elektronisches Valenzwörterbuch deutscher Verben” (‘electronic valency dictionary of German verbs’), is a free online dictionary housed at the IDS in Mannheim. The E-VALBU is based on the “Valenzwörterbuch deutscher Verben” (VALBU) (Schumacher et al. 2004), which contains detailed valency information and semantic descriptions of selected German verbs. The information in E-VALBU is based

[75] DWDS stands for “Digitales Wörterbuch der Deutschen Sprache” (‘Digital dictionary of the German language‘). Updating of the dictionary is an ongoing project hosted and carried out by the “Berlin-Brandenburgische Akademie der Wissenschaften” (‘Berlin-Brandenburg Academy of Sciences and Humanities’). The goal of the project is to provide a comprehensive digital lexical resource that is accessible for users via the internet (http://www.dwds.de/).

[76] The information about the E-VALBU is from the E-VALBU websites of the IDS (http://hypermedia2.ids-mannheim.de/evalbu/index.html, 02/16/2013).

on the corpora of the IDS from which also most examples are taken. Although the number of verbs in the E-VALBU is only 638, and thereby significantly smaller than the number I extracted from the corpus myself, many of the most frequent verbs are described in it. To illustrate my method of analysis, I now describe the selection process based on the verb *zählen* ('to count') that occurred 829 times with a prepositional phrase headed by *auf* in the IMS-DeWaC corpus.

The E-VALBU lists 11 senses for the verb *zählen* ('to count'), as illustrated by Table (4.2), some of which are very closely related, e.g. sense 1 and 4 or 10 and 11, as opposed to others, e.g. senses 6 and 8.

Table 4.2: The 11 Senses of the Verb *zählen* (‘to count’) according to E-VALBU

Verb senses	**Sense description**	**English translation**
1 zählen	die Anzahl von etwas ermitteln	‘to determine the quantity of sth.’
2 zählen	etwas nacheinander einzeln irgendwohin legen und dabei die jeweilige Anzahl sagen	‘to put one thing after the other somewhere and say each time the respective number’
3 zählen	Zahlwörter in einer Reihenfolge nennen	‘to name the numbers in a order’
4 zählen	irgendwieviel ermitteln	‘someone determines how many’
5 zählen	irgendwieviel haben	‘to have a certain number of sth.’
6 zählen auf	sich auf etwas verlassen	‘to count on sth.’
7 zählen unter/zu	etwas als etwas zugehörig betrachten	‘to regard sth. as being related‘
8 zählen zu	zu etwas gehören	‘to belong to sth.’
9 zählen	wichtig sein	‘to be important’
10 zählen als	als ein solches bewerten	‘to evaluate sth. as such‘
11 zählen als	als ein solches bewertet werden	‘to be evaluated as such’

If the list of verb senses in the E-VALBU contains a sense listed with *auf* (‘on’), I regard this verb as subcategorizing for a PP_{auf} and include these verb senses in the list of verb-PP_{auf} combinations treated here. For *zählen* (‘to count’), I included the sixth sense, *zählen auf* (‘to count on sth.’) in my list. Other verbs have several senses listed with the preposition *auf*, e.g. *warten* (‘to wait’) or *vorbereiten* (‘to prepare’), which I then all included in my list. Very rarely, there are also verbs that are not listed together with the preposition *auf* in the list of senses, but nevertheless require a prepositional phrase

headed by *auf* according to the listed *Satzbauplan* ('abstract sentence structure') and the *Belegungsregeln* ('realization rules'). For example, the verb *einstellen* ('to adjust') requires an obligatory K_{prp} ('prepositional object') according to E-VALBU, although there is not a separate sense listed as *einstellen auf* ('to adjust to'). I therefore included these verbs in the list of verbs to be investigated further. However, verbs that are not listed with a particular sense for the verb-PP_{auf} combination in E-VALBU were excluded from my selection.

The following two tables present the selection results and are the basis of the following case studies: After evaluating the 334[77] most frequent verbs according to the procedure described above I extracted 103 verbs subcategorizing for PP_{auf} with accusative case (table 4.3)[78] and 8 verbs with PP_{auf} in the dative[79] case (table 4.4).

[77] The restriction to this number of verbs is due to space limitations. However, the lower the frequency of verbs the lower is also the likelihood that the verbs are listed with a subcategorization frame containing PP_{auf} in E-VALBU or DWDS.

[78] Table (4.3) is an excerpt of the full list to illustrate the selection results; the full table can be found in Appendix B.

[79] Overall, there is a much lower number of occurrences of the preposition *auf* governing the dative case in the IMS-DeWaC: only 130,454 of the 757,388 verbs combining with the preposition *auf* are marked as possibly governing the dative case.

Table 4.3: Examples of Verbs with Subcategorized PP_{auf} + NP_{ACC} from the DeWaC-IMS Corpus

#	Verb (# of senses)	Frequency[80]	Senses with *auf*	example NPs in accusative case
1	kommen (45)	28,144	1. 'to achieve sth.'	Monatslohn ('monthly salary'), Arbeitsstunden ('work hours')
			2. 'to compute sth.'	Teilnehmer ('participants'), Betrag ('amount')
			3. 'to be allotted to sth.'	jeden Bürger ('every citizen'), drei Morde ('three murders')
2	setzen (9)	27,854	'to rely on'	Kohle ('coal'), praktische Zusammenarbeit ('practical cooperation')
3	verzichten	25,616	'to abstain from sth.'	die Kandidatur ('candidacy'), die Erbschaft ('inheritance')
4	sich beziehen (3)	20,162	1. 'to refer to sth.'	das Gespräch ('the communication'), die menschliche Natur ('the human nature')
			2. 'to relate to sth.'	die amerikanische Verfassung ('the American constitution'), die Kunst der Antike ('the art of the ancient world')
			3. 'to pertain to sth.'	sein Verhalten ('his behavior'), alles Weibliche ('everything female')
5	bringen (15)	19,535	's.o./sth. causes s.o. to have an idea'	die Spur ('the track'), den Mörder ('the murderer')
6	sich beschränken	19,503	'to limit s.o./sth.'/ 'to restrict sth./s.o.'	zehn Minuten ('ten minutes'), ein Mindestmaß ('a minimum')
			'to limit oneself to sth.' (refl.)	das Wesentliche ('the essential'), dürftige Mahlzeiten (‚frugal meals')

[80] I only include the overall frequency for verbs with several senses, since it is not possible to extract the frequencies of the different meaning variants of a verb automatically.

Table 4.4: Verbs with Subcategorized PP_{auf} + NP_{DAT} from the DeWaC-IMS Corpus

#	Verb (# of senses)	Frequency	Senses with *auf*	example NPs in dative case
1	beruhen (2)	18,849	'to be based on sth.'	einem TV-Interview ('an interview on TV'), menschlicher Sympathie ('human sympathy')
2	basieren (2)	13,366	'to be based on sth.'	also with accusative case; der Erkenntis ('the finding'), den gleichnamigen Kinofilmen ('the movies with the same names')
3	bestehen (6)	5,275	'to insist on'	seldom accusative case, more often dative case/ der Schließung ('the closing'), einer einheitlichen und umfassenden Sprachprüfung ('a consistent and comprehensive language test')
4	aufbauen (5)	2,299	'to build on sth.'/ 'to be bases on sth.'	also with accusative case; solchen Lügen ('such lies'), der Leistung ('the performance'), den historischen Strukturen ('the historic structures')
5	beharren (2)	1,431	'to insist on sth.'	seiner Meinung ('his opinion'), der Einhaltung des Vertrags ('the compliance with the contract')
6	gründen (3)	1,277	'to be based on sth./s.o.'	also with dative case; der Qualität ihrer Produkte ('the quality of their products'), einer einzigartigen Faktensammlung ('a unique collection of facts')
7	fußen (3)	1,037	'to be based on sth.'	der Überzeugung ('the conviction'), einem Roman ('a novel')
8	lasten (2)	986	'to weigh on s.o./sth.'/'to be a burden on s.o./sth.'	seinen Schultern ('his shoulders'), dem musikalischen Nachwuchs ('the young musicians')

The IMS-DeWaC provides a list of verb-PP_{auf} combinations, but the parsed corpus does not contain the actual sentences.[81] Therefore, I used the "Deutsches

[81] In that sense, FSPar (Schiehlen 2003) 'destroys' the corpus. The file of the parsed corpus contains the verb of the sentence followed by syntactically labeled phrases of the sentence as shown in the example below. The complete file is a list, each 'sentence' is a string within that list, e.g.

Referenzkorpus" (DeReKo, 'German Reference Corpus') for analyzing the verbs extracted from the IMS-DeWaC in detail. The DeReKo is the largest corpus of written German texts from different genres, e.g. newspapers, literature, and scientific publications that contains over 5.4 billion words (Kupietz and Keibel 2009; Kupietz et al. 2010). The IDS also provides the search and analysis tool Cosmas II (Corpus Search, Management and Analysis System) used for the corpus studies in Chapters 5 and 6.

In Chapter 5, I investigate the ability of Rostila's (2007) proposal of a partially schematic argument structure construction *auf* to account for combinations of *auf* with verbs. If the *auf*-construction does indeed exist, then instances of this construction must be identifiable in the large corpora that I use. I follow a usage-based approach (Barlow and Kemmer 2000) discussed in Chapter 3 to conduct the analysis.

In Chapter 6, I use the extracted verblist to identify three groups of verb-PP_{auf} combinations according to their meaning based on FrameNet (Fillmore et al. 2002). I provide three network analyses (Langacker 1987) of these groups of verb-PP_{auf} combinations. Finally, I combine the three partial lexical-constructional networks in one network to arrive at a generalizations of the three semantically similar groups of verb-PP_{auf} combinations.

'bestehen+bestehen\t[NP:1]+Lebewesen\t[ADV]+vorwiegend\t[ADJ|PP/aus:4]+aus+Kohlen#@stoff#@verbindung\n' (parsed sentence from the IMS-DeWaC containing the verb *bestehen* ('to consist of')).The string starts with the infinitive and the conjugated form of the verb. The following phrases in this example are a noun phrase *Lebewesen* ('creatures') in nominative case ('NP:1'), an adverbial phrase ('ADV') *vorwiegend* ('predominantly'), a prepositional phrase headed by *aus* ('from') governing the accusative case ('aus:4') for which the parser could not identify whether it functions as an adverbial or as a prepositional complement ('ADJ|PP'). The different phrases are divided by the tab character ('\t") and the string ends with the new-line character ('\n').

4.3 SUMMARY

In Chapter 4 I described the methodology and data I used to carry out my own analysis. I argued that a usage-based approach that employs large corpora of German is a suitable methodology to describe and explore verb-PP$_{auf}$ combinations. I also described the corpora I used and the procedures that lead to my initial list of verbs subcategorizing for PP$_{auf}$. The next two chapters provide the actual analyses of the data.

Chapter 5:

The Status of Rostila's *auf*-Construction

5.1 INTRODUCTION

In this chapter I examine Rostila's (2007) partially schematic argument structure construction headed by *auf* in greater detail to show that it cannot account for the distribution of a larger number of verbs that combine with *auf*. More specifically, I answer the following questions: (1) Which verb-PP_{auf} combinations can be generated using Rostila's (2007) construction? and (2) Which of these combinations need to be listed as conventionalized units in the lexicon based on a systematic evaluation of corpus data? Based on the tables of verb-PP_{auf} combinations extracted from the IMS-DeWaC corpus (see chapter 4, tables 4.3 and 4.4), I lay out the procedures employed here so that my analysis can be reproduced and refined in future studies. At the end of chapter 5 I discuss the consequences of the results with regard to Rostila's *auf*-construction.

5.2 TESTING FOR THE *AUF*-CONSTRUCTION OF ROSTILA (2007)

As discussed in chapter 3, Rostila (2007) proposes a partially schematic *auf*-construction to account for the combination of *auf* as a grammatical marker with certain verbs. The construction is repeated in (5.1) for convenience.

(5.1) AUF ,FUTURE EVENT/PERSPECTIVE ROLE 2': 1. ___ AUF 2. ___

According to (5.1), the PP_{auf} denotes a future event (slot 2) and the verb (slot 1) expresses a future orientation when fusing with the construction as discussed in chapter 3. I now provide a step-by-step analysis of how I tested the verbs in the lists extracted from

the IMS-DeWaC corpus, which is adapted from Proost (2009).[82] The procedure is laid out in (5.2)

(5.2) Procedure for analysis adapted from Proost (2009):
1. Extraction of verb-PP$_{auf}$ combinations according to Rostila's specifications (future orientation/future event)
2. Evaluation of the base verbs (verbs without subcategorized PP)
3. Test of near-synonyms for compatibility with the *auf*-construction

5.2.1 Extraction of Verb-PP$_{auf}$ Combinations

A verb-PP$_{auf}$ combination is an instance of Rostila's (2007) *auf*-construction in (5.1) if the verb has a future orientation, the subject is future-oriented, and the prepositional phrase denotes a future event. Combinations that do not fulfill these requirements in all linguistic contexts cannot be instances of the *auf*-construction and are therefore excluded from the list. However, there are no standardized semantic procedures that can be used to test verbs for 'future orientation' or PPs for the meaning 'future event'. Also, Rostila (2007) does not provide more detailed information about the meaning 'future event' or its relation to other canonical semantic roles like THEME or RECIPIENT, as discussed in chapter 3. Therefore, I develop my own test consisting of two parts based on general principles as follows.

First, I evaluate the status of the prepositional phrase.[83] In order to express a future event, the PP must encode an 'event'. I define 'event' here as 'situation' in the sense of Smith (1997: xiv): 'situation' is a general term for different kinds of events and states. 'Situation' in this sense takes up some time and has a specific internal temporal

[82] Proost (2009) examined verb+*nach* ('after') combinations in so-called 'search constructions' regarding their constructional status.

[83] I use the nouns listed as examples in Tables (4.3) and (4.4) which are taken from the corpus examples in the DWDS, based on frequency of occurrence. I also used this corpus when I needed more examples in difficult cases.

structure; it is opposed to concrete entities like ‘apple’. I assume that a PP that denotes a situation rather than a concrete entity can also be expressed by an embedded clause or infinitival phrase with no change of meaning, as in (5.3a-b) and (5.4a-b). I use these transformations to test the status of the PP. Transforming the PP without a change in meaning is not possible if it does not refer to a situation, as in (5.5a-b) and (5.6a-b).

(5.3) a. Tom wartet auf den Zug.
Tom.NOM waits on the train.ACC
‘Thomas is waiting for the train.’

b. Tom wartet, dass der Zug kommt.
Tom. NOM waits that the train.NOM comes
‘Tom is waiting that the train arrives/for the arrival of the train.’

(5.4) a. Tom hofft auf einen guten Job.
Tom. NOM hopes on a good job.ACC
‘Tom hopes for a good job.’

b. Tom hofft (darauf), einen guten Job
Tom.NOM hopes(there.ADV-r-on.PREP) a good job.ACC
zu bekommen.
to get
‘Tom hopes to get a good job.’

(5.5) a. Tom fährt auf Autos ab.
Tom.NOM drives on cars.ACC PTCL
‘Tom likes cars.’

b. ?Tom fährt (darauf) ab, dass
Tom.NOM drives (there.ADV-r-on.PREP) PTCL that
Autos existieren.
cars.NOM exist
‘Tom likes (the situation) that cars exist.’

(5.6) a. Tom sticht auf seinen Zahnarzt ein.
Tom.NOM stabs on his dentist.ACC. PTCL
‘Tom stabs his dentist.’

b. *Tom sticht (darauf) ein, dass
Tom.NOM stabs (there.ADV-r-on.PREP) PTCL that
sein Zahnarzt existiert.
his dentist.NOM exists
*‘Tom stabs (on the situation) that his dentist exists.’

I consider PPs encoding situations only if they can felicitously be transformed into subordinated clauses or infinitival phrases as in (5.3) and (5.4). Verbs that combine with a PP_{auf} that cannot be transformed in this way are excluded from the list.

In the second step, I evaluate the situation denoted by a prepositional phrase for its temporal meaning, i.e. it must express a situation at a future point in time. For this purpose, I include attributive phrases (adverbs or attributive clauses) that locate the situation in the future (cf. 5.7a) and in the past (cf. 5.7b) with regard to the speech time.[84]

(5.7) a. Tom wartet auf den Zug,
Tom.NOM waits on the train.ACC
der in zwei Stunden kommt.
that.NOM in two hours comes
'Tom is waiting for the train that will arrive in two hours.'

b. Tom wartet auf den Zug,
Tom.NOM waits on the train.ACC
der gestern angekommen ist.
that.NOM yesterday arrived is
'Tom is waiting for the train that arrived yesterday.'

Although grammatically well-formed, (5.7b) is not a logical sentence, since the activity of waiting entails that something has not yet happened.[85] In this sense, *warten* ('to wait') is a 'future-oriented' verb with a 'future-oriented' subject when it occurs in combination with the preposition *auf*, in contrast to the verbs in (5.8).

(5.8) a. *Toms Einstellung basiert auf den Büchern,
Tom's attitude.NOM is-based on the books.DAT
die er nächstes Jahr lesen wird.
that.NOM he next year read will
'Tom's attitude is based on the books that he will read next year.'

[84] I thank Katrin Erk for discussing this idea with me.
[85] A sentence like (5.7b) might of course be used in various contexts. Sentences that require such additional entailments are not considered here. I also do not count them as fulfilling the test criteria.

b. Toms Einstellung basiert auf den Büchern,
Tom's attitude.NOM is-based on the books.DAT
die er letztes Jahr gelesen hat.
that he.NOM last year read has
'Tom's attitude is based on the books that he read last year.'

(5.8a) shows that *basieren auf* ('to be based on') cannot refer to a future situation, but instead denotes a state or an event that foregoes the entity or situation denoted by the subject, in (5.8a) *Toms Einstellung* ('Tom's attitude'). Therefore, this verb is not an instance of the *auf*-construction proposed by Rostila (2007). Some verbs combine with a PP_{auf} that cannot felicitously be attributed with temporal phrases or are at odds with these attributes. Consider the examples in (5.9).

(5.9) a. ?Tom spezialisiert sich auf
Tom. NOM specializes REFL on
die morgige Mikrobiologie.
the tomorrow's microbiology.ACC
'Tom specializes in tomorrow's microbiology.'
b. ?Tom spezialisiert sich auf
Tom. NOM specializes REFL on
die gestrige Mikrobiologie.
the yesterday's microbiology.ACC
'Tom specializes in yesterday's microbiology.'

From this semantic incompatibility with temporal adverbials I conclude that PP_{auf} in these cases does not express a temporal meaning, and, therefore also does not denote a future event. Verbs with PP_{auf} that react to the tests in the same way as the examples in (5.9) are excluded from the list of possible instantiations of Rostila's (2007) *auf*-construction.[86] I only include the verb-preposition combinations that behave like *warten auf* ('to wait for') in both tests, i.e. the PP_{auf} can be construed as a situation (cf. 5.3) and the PP_{auf} must be interpreted as being located in the future (cf. 5.7) relative to the speech

[86] The two-step testing procedure does not work for all verbs equally well. If in doubt, I included the verb-PP combination to avoid excluding too many verbs that could be instances of the *auf*-construction.

time. These verb-*auf* combinations are possible instantiations of Rostila's *auf*-construction. All other verb-*auf* combinations are excluded from the list and are not considered further here.[87] An excerpt of the list of verbs ranked by their frequency in IMS-DeWaC resulting from this procedure is given in Table (5.1).[88] Note that none of the verbs combining with *auf* governing the dative case passed the test, i.e. all of the remaining verbs occur with a prepositional phrase [P_{auf}+NP_{ACC}].

[87] Event types (Smith 1997) can also give clues about the temporal meaning of the PP_{auf}, e.g achievements and semelfactives seem to prevent the occurrence of a future-oriented PP_{auf}. These are situations that consist only of the event, there is no temporal extension that allows for reaching into the future. Consider the verb *sich einigen auf* ('to agree on sth.'), which is an achievement: "The temporal schema of an Achievement consists of a single stage, a change of state … ." (Smith 1997: 30) The verb denotes only the moment when the arguing or discussing parties have reached an agreement, i.e. the change of state. "Preliminary or resultant states may be associated with the event, but they are not considered part of it" (Smith 1997: 30). The prepositional phrase denotes a resulting state of the negotiations but it cannot refer to a future event. However, more research is necessary to determine the specific relationship between event types and future meaning.

[88] Table (5.1) is an excerpt, the full table can be found in Appendix C.

Table 5.1: Verbs-PP [P_{auf}+ NP_{ACC}] Combinations with Future Meaning (Excerpt)

#	**Verb (# of senses)**	**Frequency**	**Senses with *auf***	**Example NPs in accusative case**
1	warten (5)	15,094	's.o./sth. is waiting for sth.'	dich ('you'), Hilfe ('help')
			'sth. is waiting for something to happen'/'sth. needs to be done to sth.'	eine Wäsche ('a washing'), Erledigung ('handling')
			'sth. is waiting for s.o.'	die Besucher ('the visitors'), die Ermittler ('the detectives')
2	vorbereiten (4)	12,202	'to prepare s.o. for sth.'	auf die Prüfung ('the exam'), den neuen Bus ('the new bus')
			'to get ready for sth.'	weitere Preissteigerungen ('further increases of the price'), eine Kürzung der Mittel ('financial cuts')
3	sich auswirken (4)	10,475	'to affect s.o./sth.'	das körperliche Wohlbefinden ('the physical well-being'), den Arbeitsmarkt ('the job market')
4	übertragen (8)	9,490	'to transfer sth. to sth.'	andere Kunstgebiete ('other areas of creative or artistic work'), die dortigen Verhältnisse ('the conditions there')
			'to carry sth. over'	die Mannschaft ('the team'), das Publikum ('the audience')
5	hoffen (2)	7,827	'to hope for sth.'	eine bessere Zukunft ('a better future'), einen energischen Schiedsrichter ('an energetic referee')
6	zielen (3)	6,188	'to aim for sth./s.o.'	eine Stärkung des Selbstwertgefühls ('a strengthening of the self esteem'), junge Käufer ('young consumers')

Table (5.1) shows that 27 verbs (about 25%) out of the 111 extracted verbs occur with a PP_{auf} that encodes the meaning 'future event' according to the tests described

before. These 27 verbs are possible instances of Rostila's *auf*-construction and will now be tested further.

5.2.2 Evaluation of the Base Verbs

The next step of the analysis follows from the principles of Construction Grammar: If Rostila's *auf*-construction exists as an independently existing argument structure construction that is productive, then there must be base verbs that occur outside of the verb-PP_{auf} combinations without the future meaning that come about only by the fusion of the verb with the construction. In this step I evaluate the basic meanings of the verbs in Table (5.1) in order to exclude all verb-*auf* combinations that lack such a base verb with a non-future meaning. These verbs could be instances of the *auf*-construction, but they cannot be used to test for the existence of the construction; these verb-preposition combinations might as well be fully conventionalized and as such be stored in the mental lexicon. Thus, there is no need to postulate a partially schematic argument structure construction for these verbs.

For establishing the base verbs I consulted the E-VALBU and the DWDS. I take as base verbs those verb senses that are listed without any prepositional phrase in their argument structure in the dictionaries. The results are shown in Table (5.2).[89]

[89] Table (5.2) is an excerpt, the full table can be found in Appendix D.

Table 5.2: Base Verbs of the Verb-PP$_{auf}$ Combinations (Excerpt)

#	**Verb (# of senses)**	**Senses with PP$_{auf}$**	**Base verbs without PP**	**Meaning of base verb**
1	warten (5)	's.o./sth. is waiting for sth.'	warten	'to wait'
		'sth. needs to be done to sth.'	warten	'to wait'
		'sth. is waiting for s.o.'	warten	'to wait'
2	vorbereiten (4)	'to prepare s.o. for sth.'	vorbereiten	'to prepare'
		'to get ready for sth.'	vorbereiten	'to prepare'
3	sich auswirken (4)	'to affect s.o./sth.'	(sich) auswirken	1. 'to affect', 'to have an effect', 2. 'to obtain sth.'
4	übertragen (8)	'to transfer sth. to sth.'	übertragen	'to transfer, transmit'
		'to carry sth. over'	übertragen	'to transfer, transmit'
5	hoffen (2)	'to hope for sth.'	hoffen	'to hope'
6	zielen (3)	'to aim for sth./s.o.'	zielen	'to take aim' (physically)
7	einstellen (7)	'to adjust sth./to sth.'	einstellen	1. 'to adjust sth.', 2. 'to appoint s.o.', 3. 'to stop sth.', 4. 'to tie a record', 5. 'to place sth. somewhere'

The data in Table (5.2) show that 22 of the verbs have base verbs that occur without a prepositional phrase. The six verbs *abzielen* ('to intend sth.'), *hinwirken* ('to aspire sth.'/ 'to work towards sth.'), *hinarbeiten* ('to work toward sth.'), *hinzielen* ('to be aimed at sth.'), *lauern* ('to lurk'/'to watch'/'to waylay'), and *dringen* ('to insist') lack base verbs that occur without prepositional phrases and are thus excluded from the following analysis.

The logical next step is to analyze the meaning of the base verbs regarding their future meaning. If the base verbs already have a future meaning, then they cannot be instances of Rostila's *auf*-construction: the future meaning would in these cases not be due to the fusion with the construction. However, as stated before, semantic procedures to test for the future meaning of verbs do not exist. Moreover, there is no definition of what

it means for a verb to have a future meaning or, in Rostila's terms, to be 'future oriented'. Consider for instance the verbs *warten* ('to wait'), *wetten* ('to bet'), *hoffen* ('to hope'), *spekulieren* ('to speculate'), and *vorbereiten* ('to prepare'). These verbs denote mental or mental and physical activities that presuppose an event or a situation that is not (yet) in existence in the following sentences from DeReKo.[90]

(5.10) a. Die ersten Blumen ... brauchen Wärme und auch Licht
the first flowers. NOM need warmth and also light.ACC
doch alle müssen warten.
but all. NOM must wait
'The first flowers need the warmth and the light but they all must wait.'
BRZ09/APR.01788 Braunschw. Z., 04.04.2009

b. Ich wette, also glaub' ich.
I.NOM bet therefore believe I. NOM
'I bet and therefore I believe.'
HAZ08/JUN.03348 HAZ, 19.06.2008, S. 8

c. Hoffen wir mal, dass wenigstens die Gefühle
hope we. NOM PTCL that at least the emotions.NOM
echt sind.
real are
'Let's hope that at least the emotions are real.'
HMP09/JAN.00965 MOPO, 16.01.2009, S. 47

d. Seit Monaten wird spekuliert, ob das Paar
for months AUX speculated whether the couple. NOM
bald heiratet.
soon marries
'It has been speculated for months whether or not the couple will get married soon.'
M09/NOV.94637 Mannh. Morgen, 28.11.2009, S. 16

[90] I thank John Beavers for pointing this out to me, who also reminded me of the long tradition in formal semantics dealing with such verbs and situations under the headings of *epistemic modality*, *evidentiality,* and *propositional attitude*. These theories of formal semantics are, however, beyond the scope of my dissertation.

e. Der Finanzmarkt und Kunden wie
the capital market. NOM and customers. NOM like
die Backwaren- und Kaffeekette Dunkin' Donuts
the bakery and coffee chain Dunkin' Donuts. NOM
konnten sich vorbereiten.
could REFL prepare
'The capital market and customers like the bakery and coffee chain Dunkin' Donuts could prepare.'
M09/NOV.86891 Mannh. Morgen, 03.11.2009, S. 7

The sentences in (5.10) all denote a situation in which something has not happened yet (5.10a, e) or situations in which there is a gap of knowledge (5.10b-d) that may or may not be filled at some future point in time. Now consider the modified sentences in (5.11).

(5.11) a. Die ersten Blumen ... brauchen Wärme und auch Licht
the first flowers. NOM need warmth and also light. ACC
doch alle müssen auf die Sonne warten.
but all. NOM must on the sun wait
'The first flowers need the warmth and the light but they all must wait for the sun.'

b. Ich wette auf Pferde, also glaub'
I.NOM bet on horses therefore believe
ich (an meine Gewinnchance).
I. NOM (in my chance of winning)
'I bet on horses and therefore I believe (in my chances of winning.'

c. Hoffen wir auf echte Gefühle.
hope we. NOM on real emotions.
'Let's hope for real emotions.'

d. Seit Monaten wird darauf spekuliert,
for months AUX there.ADV-r-on.PREP speculated
dass das Paar bald heiratet.
that the couple. NOM soon marries
'It has been speculated for months that the couple will get married soon.'

e. Der Finanzmarkt und Kunden wie die
the capital market.NOM and customers. NOM like the
Backwaren- und Kaffeekette Dunkin' Donuts konnten
bakery and coffee chain Dunkin' Donuts. NOM could
sich auf das Ereignis vorbereiten.
REFL on the event prepare
'The capital market and customers as the bakery and coffee chain Dunkin' Donuts could prepare for the event.'

When the PP_{auf} combines with these verbs, it provides more information about the situation or event that is not realized (yet), but it does not evoke a change of meaning of the base verbs. Furthermore, what Rostila (2007) identifies as 'future orientation' is already part of the meaning of these base verbs in (5.10a-e) above, indicating that the verb-*auf* combinations *warten auf* ('to wait for'), *wetten auf* ('to bet for'), *hoffen auf* ('to hope for'), *spekulieren auf* ('to speculate on'), and *vorbereiten auf* ('to prepare auf') cannot be considered the result of the fusion with Rostila's (2007) *auf*-construction in (5.1) above. In other words, the combination of the verb and the preposition *auf* as a grammatical marker is an idiosyncratic feature of these verbs that must be analyzed in terms of individual lexical entries.

Two other base verbs denote a caused change: *sich auswirken* ('to affect s.o./sth.'), and *einstimmen* ('to tune'). These verbs denote a change of a mental or physical state as a result of an action and thereby evoke a temporal meaning: the verb presupposes a linear chain of events. Consider the sentence in (5.12).

(5.12) a. Der Rat soll erfahren, wie sich
the council.NOM shall know how REFL
seine Beschlüsse finanziell auswirken.
his decisions.NOM financially affect
'The council should know what financial effects its decisions has.'
BRZ09/DEZ.09148 Braunschw. Z., 18.12.2009

b. Die Gäste werden von DJ Jens mit Musik ...
the guests.NOM AUX from DJ Jens with music …
eingestimmt.
tuned
'The guests are getting in the mood by the music of DJ Jens.'
RHZ09/SEP.15059 RZ, 16.09.2009

I propose that these base verbs already have a temporal meaning: they express a chain of events. As change-of-state-verbs, they are telic and the resultant state is the endpoint of the activity denoted by the verb. When these verbs combine with *auf*, the prepositional phrase provides additional information about the resultant state, but the base verbs could be considered to have already a future or 'future-oriented' meaning and, consequently, their combination with the preposition *auf* should not be considered as result from the fusion with the *auf*-construction as proposed by Rostila (2007).

However, the discussion about the lexical meanings of the base verbs in (5.10-5.12) shows again that the semantics of lexical items is difficult to determine and cannot feliticiously be based on singular features. This means that although I have argued based on corpus examples that the base verbs in (5.10) and (5.12) already have a future meaning, there might be other contexts and usages where this future meaning is not apparent. Therefore, I include these seven base verbs in the following analysis of near-synonyms, together with the 15 remaining verbs in Table (5.2) without future meaning.

These 15 verbs include five verbs denoting mental activities (*sich freuen* ('to be happy'), *sinnen* ('to muse'), *zählen* ('to count'), *rechnen* ('to calculate'), and *einrichten* (in the sense of 'to make possible')), nine verbs denoting physical activities (*pochen* ('to knock'), *zielen* ('to aim'), *drängen* ('to push'), *hinauslaufen* ('to run outside'), *anlegen* ('to land', 'to dress'), *sich einstellen* ('to come', 'to arrive'), *umstellen* ('to relocate', 'to adapt'), *einrichten* ('to furnish'), *übertragen* ('to transfer, transmit'), one stative verb (*brennen* ('to burn')) and the idiomatic verb phrase *sich richten* ('to commit suicide').

These verbs do not have a temporal, future-oriented meaning. This could mean that the different meanings of these verbs when they combine with a PP_{auf} could be the result of the fusion with Rostila's *auf*-construction. If that were indeed the case, then these verbs should not be single instances. Instead, we should be able to find more verbs that are similar in meaning that also combine with the *auf*-construction. In the following section, I therefore test the compatibility of Rostila's *auf*-construction with near-synonyms of the verbs in Table (5.2).

5.2.3 Test of Near-Synonymy for the Compatibility with Rostila's *auf*-Construction

Using the "Duden online" and the "OpenThesaurus"[91] I first sought to find near-synonyms of the 22 verbs, then I employed the E-VALBU and the DWDS to determine if these verbs conventionally occur with a PP_{auf} in a future-oriented meaning.[92] For base verbs with more than one sense I included near-synonyms for all of them. The results of this search are presented in Table (5.3).[93]

[91] The German dictionary of synonyms and associations can be accessed under the hyperlink http://www.openthesaurus.de/.

[92] Another possibility would have been to test each of the near-synonyms in a large corpus like the DeReKo for occurrences of this pattern. I decided against this procedure because of space limitations.

[93] Table (5.3) is an excerpt; the full table together with the English translations of the near-synonyms is provided in Appendix E.

Table 5.3: Near-Synonyms of the Non-Future-Oriented Base Verbs (Excerpt)[94]

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
anlegen	zielen, abzielen, aus sein auf, es abgesehen haben auf, hinsteuern, hinzielen, sinnen (7)	aufsetzen, einschweben, herabfliegen, aneinandergeraten, anbinden, anbändeln, anhalten, dranlegen, legen, in Anschlag bringen, anschlagen, (an)visieren, halten, anziehen, bekleiden, hineinschlüpfen, kleiden, schlüpfen, überstreifen, überwerfen, überziehen, antun, aufbauen, bilden, einrichten, erzeugen, installieren, schaffen, erschaffen, erstellen, festlegen, investieren, einlegen, platzieren, ausgeben, bezahlen, spendieren, zahlen, ausspucken, hinblättern, hinlegen, sich verausgaben, anvisieren, ausgehen, intendieren, trachten (46)
brennen	(0)	flackern, glimmen, glühen, hochschlagen, lodern, lohen, schwelen, flammen, emporflammen, sengen, stechen, sich brühen, verbrennen, verbrühen, abbrennen (15)
drängen	pochen (1)	sich durcharbeiten, gelangen, hineindringen, stoßen, sich vorarbeiten, vordringen, vorstoßen... (18)

The distribution of near-synonyms that are compatible with a PP_{auf} and express future-orientation compared to the near-synonyms that are not compatible with the construction in Table 5.3 shows that the vast majority of near-synonyms are not compatible with Rostila's *auf*-construction. In fact, most of the compatible near-synonyms are synonyms of the verb+*auf* sense of the verb. I included them in the list because the dictionaries list them and it also becomes apparent that many near-synonyms

[94] Glosses for the verbs in table (5.3) are compiled in Appendix E.

of the verb+*auf* combinations are not compatible with the construction itself. The only verbs that exhibit a weak tendency for combining with PP_{auf} in the future-oriented sense are *sinnen* ('to muse'), *zielen* ('to aim'), *anlegen* ('to aim'), *rechnen* ('to calculate'), and *zählen* ('to count'). But even for these verbs, there is no systematic pattern; many near-synonyms of the verbs do not occur as a part of the verb-PP_{auf} combination.

5.2.4 Conclusion

From these findings I conclude that the combination of certain verbs with *auf* cannot be explained by general rules and as such the partially schematic argument structure construction *auf* proposed by Rostila (2007) is not a viable analysis of the phenomenon in question. According to Rostila's *auf*-construction, many more verbs should combine freely with a PP_{auf} to yield a future meaning. For instance, the verbs *pochen* ('to knock'), *klopfen* ('to knock', 'to beat') and *hämmern* ('to beat', 'to pound') show similar syntactic properties in their base meanings (cf. 5.13a-c) but only *pochen* can combine with the preposition *auf* with the different meaning of 'to insist on something' (cf. 5.13d).

(5.13) a. Brandolf pocht an die Tür.
Brandolf.NOM knocks on the door
'Brandolf is knocking on the door.'

b. Dortje klopft an die Wand.
Dortje.NOM beats on the wall
'Dortje is knocking on the wall.'

c. Sigmond hämmert an das Fenster.
Sigmond.NOM pounds on the window.
'Sigmond is beating on the window.'

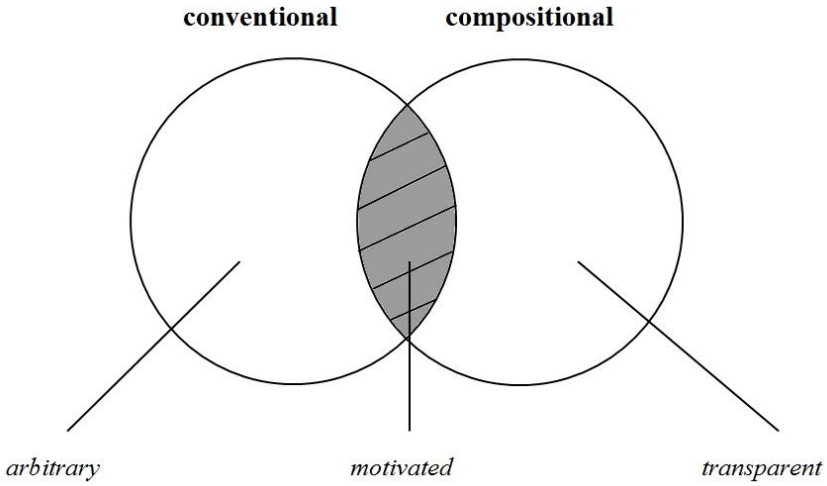
d. Ulf pocht/*klopft/*hämmert auf
Ulf.NOM knocks/beats/ pounds on
die strenge Einhaltung der Regeln.
the strict adherence the rules.GEN
'Ulf insists on strictly adhering to the rules.'

e. Graf Wolod pocht/ klopft/ hämmert auf
count Wolod.NOM knocks/ beats/ pounds on
den Tisch.
the table
'Count Wolod is knocking/beating/pounding on the table.'

However, there are no general syntactic or semantic rules that account for the ability of *pochen* to occur in this pattern and at the same time prevent *klopfen* and *hämmern* from participating in this process of meaning extension in connection with the preposition *auf*. All three verbs can combine with the preposition *auf* governing the accusative case (cf. 5.13e). This means that the combination of *pochen* with PP_{auf} paired with a meaning that is different from the base verb is a matter of conventionalization, i.e. the combination *pochen auf* in the sense 'to insist' is idiosyncratic (and also presumably metaphorical).

After the discussion of *pochen* above that is exemplary for all verbs in table (5.3) the question comes to mind why researchers posit general mechanisms to account for the distribution and combination of verbs together with PPs (e.g. Bouillon 1984, Domínguez Vázquez 2005, Eroms 1981, 1991, Lerot 1982, and Rostila 2007). The underlying assumption for positing such rules is that the process of combining verbs with particular prepositions is a compositional process that yields a transparent meaning. Perceived similarities in the meanings of the verbs and/or the prepositional uses lead to generalizations of the individual occurrences and to the formation of seemingly consistent categories. I argue instead, based on Boas (2003: 139ff) that the verb-PP_{auf} combinations are conventionalized. See figure (5.1) from Boas (2003: 140) for an illustration of the relationship between conventional and compositional constructions.

Figure 5.1: The Relationship between Conventional and Compositional Constructions



(Boas 2003: 140)

Compositional constructions are transparent: the combination of the parts of the construction results from general rules of the language and are therefore predictable, e.g. subject-verb agreement in German according to which the finite verb in a sentence is morphologically modified to match the person and number of the subject. Conventionalized constructions, on the other hand, are arbitrary combinations of their constituents and there are no general rules that can predict the meaning of such combinations. Idiomatic phrases such as *ins Gras beißen* (literally 'to bite into the grass', i.e. 'to die') are conventionalized constructions that must be listed in the lexicon.

There is, however a third group of constructions that are both conventional and compositional. This intersection of transparent and yet arbitrary constructions is indicated by the shaded area in figure (5.1). Constructions that fall in this area are motivated to some degree, e.g. resultative constructions are such a case, according to Boas (2003). He shows that the general rule, i.e. the resultative construction with the syntactic frame [NP V NP AP/PP] can neither account for the restriction of verbs that can occur in this

construction, nor for the selectional preferences of the verbs for APs or PPs which are conventionalized.

The verb-PP$_{auf}$ combinations clearly reside in the conventionalized area in figure (5.1) according to my analysis of the data. Some verb-*auf* combinations are motivated by the uses of the verbs in different areas, e.g. *zielen auf* ('to aim at') is used in this combination in the literal meaning of pointing a weapon on something to take aim; or *schieben auf* ('to make someone responsible for something') contains the verb *schieben* ('to push') that can naturally combine with a locative preposition to denote the goal of the movement. As there are other locative prepositions available in German to denote the goal of a movement, it is not obvious why the choice fell on *auf* instead of *in* ('in') or *zu* ('to'), for instance. However, the verb-PP$_{auf}$ combinations are compositional in the sense that these verbs require a preposition as an object marker. The preposition *auf* that serves as the object marker in the verb-PP$_{auf}$ combinations studied here is arbitrary from a synchronic point of view. Therefore, these verb-PP$_{auf}$ combinations are both transparent and arbitrary and thus fall in the group of motivated constructions as indicated by the shaded area in figure (5.1).

This hybrid nature of the verb-PP$_{auf}$ combinations makes it necessary to analyze them in detail which means to examine these constructions at the lexical level in different contexts. Such an investigation provides detailed descriptions of actual language use that should be recorded by lexicographic resources. It furthermore might reveal patterns on a different level and give us a better idea about the meaning of prepositional argument markers in general.

5.3 SUMMARY

In this chapter I conducted a study based on corpus data to systematically explore the adequacy of the partially schematic argument structure construction *auf* proposed by Rostila (2007). I adapted the procedure of Proost (2009) to determine whether or not and in how far Rostila's construction can account for verb-*auf* combinations. The results of the data analysis lead me to reject Rostila's (2007) claim of the existence of such a construction. Instead, such combinations are idiosyncratic, conventionalized structures in the language. In chapter 6 I propose an alternative account based on actual usage data, and I investigate the data for patterns in order to describe and analyze them within the framework of Construction Grammar.

Chapter 6:

Verb-PP$_{auf}$ Combinations: A Network Analysis

6.1 INTRODUCTION

The lexical analysis in the previous chapter concluded that verb-PP$_{auf}$ combinations are conventionalized multi-word units that are recorded in the lexicon. I argued that general rules such as the partially schematic argument structure construction proposed by Rostila (2007) cannot account for the distribution of these verb-preposition combinations in the data. In this chapter I suggest that there is some degree of regularity even in the absence of general compositional principles. More specifically, I claim that these verb-PP$_{auf}$ combinations are a part of a hierarchically structured network of constructions, extending from lexically-specific constructions all the way to more abstract types of constructions (Langacker 2000, Bybee 2013). Such networks still do not allow predictions about which verbs can combine with *auf,* but they do show that the conventionalized combinations of verbs and PPs headed by *auf* are motivated as discussed in chapter 5.

6.2 HIERARCHICALLY STRUCTURED NETWORKS

6.2.1 FrameNet

The hierarchically structured networks developed here are based on the principles of Frame Semantics (Fillmore 1985, Fillmore and Atkins 1992) discussed in chapter 3, in particular, on data from FrameNet,[95] a lexical database "committed to a descriptive framework based on semantic frames and to documenting its observation on the basis of carefully annotated attestations taken from corpora" (Fillmore et. al 2002: 1157). The

[95] https://framenet.icsi.berkeley.edu/fndrupal/home.

FrameNet database consists of lexical entries for nouns, verbs, and adjectives as well as the descriptions of the frames together with their frame elements. It also contains the annotated corpus examples from the British National Corpus. In FrameNet,

> [e]ach entry represents a **lexical unit**, a pairing of a lemma with a semantic frame (i.e. one sense of a word). Each entry details the FEs that can occur with a particular lexical unit and the syntactic patterns in which they can occur, in terms of phrase type and grammatical function (Fillmore et al. 2002: 1158, emphasis in original).

This means a semantic frame is evoked by one particular sense of a word (a lexical unit). For example, the verb *burn* in the sentences *The wound burned* and *He was burning with impatience* evokes two different frames (‘`Perception_body`’ vs. ‘`Emotion_heat`’). Thus, *burn* has (at least) two distinct lexical units, i.e. two different senses defined with reference to the different semantic frames they evoke.

I illustrate the implementation of Frame Semantics in FrameNet by showing how the verb *burn* is accounted for. First, FrameNet lists five different frames which are evoked by *burn*, i.e. the word has five lexical units according to FrameNet. These frames are: `Natural_features`, `Emotion_heat`, `Perception_body`, `Cause_harm`, and `Experience_bodily_harm`. For the following description of the components of FrameNet, I use the `Experience_bodily_harm` frame that describes situations in which “an EXPERIENCER is involved in a bodily injury to a BODY_PART. (In some cases, no BODY_PARTS need to be indicated.) Often an INJURING_ENTITY, is mentioned.”[96] The frame definition contains the core and non-core[97] frame elements (FEs, printed in small

[96] INJURING_ENTITY: The Experiencer injures him/herself on an INJURING_ENTITY: He punched me, but he hurt his fist on my nose . (example from FrameNet), https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Experience_bodily_harm.

[97] FrameNet classifies frame elements “in terms of how central they are to a particular frame, distinguishing three levels: core, peripheral, and extra-thematic.” (Ruppenhofer et al. 2010: 19) Core and non-core, i.e. peripheral FEs are defined in FrameNet in the following way: “A core frame element is one that instantiates a conceptually necessary component of a frame, while making the frame unique and different from other frames.” (Ruppenhofer et al. 2010: 19) Non-core FEs: “Frame elements that do not

capitals) that are specified and mostly illustrated by corpus examples in the entry following the definition. The identification of FEs as core FEs is done via the examination of usage data. FEs are labeled as core if they adhere to one of the following three criteria (Ruppenhofer et al. 2010: 19f.):

1. The frame element must be overtly specified in all syntactic realizations (e.g. the verb *resemble* when evoking the `Similarity` frame always requires a post-verbal complement NP as in *This sponge superficially resembles a living bath sponge*[98]).
2. The frame element is interpreted in a definite way when omitted in the syntactic realization (e.g. the verb *arrive* as in *John arrives* must have an FE GOAL that is understood in the context).
3. The frame element's semantics cannot be predicted from its form, e.g. marking with prepositions as in locative adverbials such as *on the table.* This is the case for subjects and objects in simple active sentence since they have no formal marking to convey their meaning. This condition also applies to FEs with idiosyncratic formal meaning, e.g. conventionalized verb-PP combinations, meaning that all PP_{auf}'s are core elements in the frames that the verbs they combine with evoke.

The `Experience_bodily_harm` frame has two core FEs: the BODY_PART and the EXPERIENCER. The BODY_PART "is the location on the body of the EXPERIENCER where the bodily injury takes place"; the EXPERIENCER is "the being or entity that is

introduce additional, independent or distinct events from the main reported event are characterized as peripheral. Peripheral FEs mark such notions as Time, Place, Manner, Means, Degree, and the like. They do not uniquely characterize a frame, and can be instantiated in any semantically appropriate frame." (Ruppenhofer et al. 2010: 20)

98 Example sentence from FrameNet.

injured".[99] In addition to these two core FEs, the frame has nine non-core FE that can be expressed in realizations of this frame.[100] The core FEs need not be obligatorily realized at the syntactic level.[101]

Figure 6.1: Realization Table for *burn*

burn.v

Frame: Experience_bodily_harm

Definition:

FN: to be injured due to the application of heat to one's body

Frame Elements and Their Syntactic Realizations

The Frame Elements for this word sense are (with realizations):

Frame Element	Number Annotated	Realization(s)
Body_part	(15)	INI.-- (1) NP.Obj (14)
Containing_event	(1)	PP[in].Dep (1)
Experiencer	(18)	NP.Ext (18) NP.Obj (4) 2nd.-- (12)
Injuring_entity	(7)	PP[with].Dep (1) PP[in].Dep (1) PPing[on].Dep (1) PP[on].Dep (4)
Severity	(3)	AVP.Dep (1) AJP.Dep (2)
Time	(2)	AVP.Dep (1) PP[ago].Dep (1)

In addition to the information about the frame that a Lexical Unit evokes, FrameNet contains a table of the Frame Elements and their syntactic realizations. The Realization Table for the example *burn* is given in Figure (6.1). The Realization Table above shows the number of sentences in which the FEs occur and how they are

[99] https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Experience_bodily_harm.
[100] The frame `Experience_bodily_harm` contains the following non-core FEs: CONTAINING_EVENT, DURATION, FREQUENCY, INJURING_entity, ITERATIONS, MANNER, PLACE, SEVERITY, and TIME.
[101] The website also lists the already the annotated Lexical Units that also evoke this frame.

syntactically realized. For example, the FE BODY_PART occurs in 15 annotated corpus examples; in 14 of them it is realized as a noun phrase object (NP.Obj) and in one as INI.[102] Furthermore, FrameNet reports the valence patterns of each lexical unit. Figure (6.2) shows the valence table for *burn* in which we can see that the FE BODY_PART is realized predominantly as a noun phrase object (NP.Obj) in most of the annotated corpus sentences.

The information about the verb *burn* discussed above pertains only to the lexical unit that evokes the frame `Experience_bodily_harm`, which can also be evoked by other lexical units.[103] This overview about the information of the lexical units and its organization within the FrameNet database shows that the meaning of words (nouns, verbs, and adjectives) is captured in relation to the background knowledge, i.e. the semantic frames that are necessary to interpret the lexical units appropriately.

[102] INI (Indefinite Null Instantiation) is one of three types of null instantiations (the others being CNI 'Constructional Null Instantiation' and DNI 'Definite Null Instantiation') (see Fillmore 1986). These are labels for conceptionally salient FEs that are omitted as overt lexical or phrasal material in the corpus sentence.

[103] The frame `Experience_bodily_harm` is also evoked by the following lexical units: *abrade.v, break.v, bruise.v, burn.v, cut.v, graze.v, hit.v, hurt.v, injure.v, jam.v, pull.v, scrape.v, smack.v, sprain.v, strain.v, stub.v, sunburn.v, tear.v, twist.v*. FrameNet provides the information about the syntactic realization and valence for all already annotated lexical units in the frames.

Figure 6.2: Table of Valence Patterns for *burn*

VALENCE PATTERNS:

These frame elements occur in the following syntactic patterns:

Number Annotated	Patterns				
1 TOTAL	Body_part	Containing_event	Experiencer	Experiencer	Severity
(1)	NP Obj	PP[in] Dep	2nd –	NP Ext	AVP Dep
4 TOTAL	Body_part	Experiencer	Experiencer		
(3)	NP Obj	2nd –	NP Ext		
(1)	NP Obj	NP Ext	NP Ext		
6 TOTAL	Body_part	Experiencer	Experiencer	Injuring_entity	
(1)	INI –	NP Ext	NP Obj	PP[with] Dep	
(1)	NP Obj	2nd –	NP Ext	PP[in] Dep	
(1)	NP Obj	2nd –	NP Ext	PPing[on] Dep	
(3)	NP Obj	2nd –	NP Ext	PP[on] Dep	
1 TOTAL	Body_part	Experiencer	Experiencer	Severity	
(1)	NP Obj	2nd –	NP Ext	AJP Dep	
2 TOTAL	Body_part	Experiencer	Experiencer	Time	
(1)	NP Obj	2nd –	NP Ext	AVP Dep	
(1)	NP Obj	2nd –	NP Ext	PP[ago] Dep	
1 TOTAL	Body_part	Experiencer	Injuring_entity		
(1)	NP Obj	NP Ext	PP[on] Dep		
2 TOTAL	Experiencer	Experiencer			
(2)	NP Ext	NP Obj			
1 TOTAL	Experiencer	Experiencer	Severity		
(1)	NP Ext	NP Obj	AJP Dep		

6.2.2 Frame-to-Frame Relations

The frames structuring the lexicon of a language form a complex network that involves intricate relationships of different types. FrameNet models these relationships by semantic types and different kinds of frame-to-frame relations which are provided in table (6.1) and below. By providing frame-to-frame relations and the semantic types, FrameNet aims to situate the frame elements and the lexical units in the "semantic space" of our cultural and linguistic knowledge (Ruppenhofer et al. 2010: 73).

Table 6.1: Frame-to-Frame Relations in FrameNet

Relation	**Sub**	**Super**
Inheritance	Child	Parent
Perspective_on	Perspectivized	Neutral
Subframe	Component	Complex
Precedes	Later	Earlier
Inchoative_of	Inchoative	State
Causative_of	Causative	Inchoative/State
Using	Child	Parent
See_also [1]	Referring Entry	Main Entry

In the example of *burn* evoking the `Experience_bodily_harm` frame there are only two relevant frame relations, the Inheritance relation and the Using relation. According to Ruppenhofer et al. (2010: 75), Inheritance "is the strongest relation between frames, corresponding to … many ontologies. With this relation, anything which is strictly true about the semantics of the Parent must correspond to an equally or more specific fact about the Child." The `Experience_bodily_harm` frame has an Inheritance relationship with the `Event` frame: it is the "child" of the more general `Event` frame. That means that all FEs in the `Event` frame have corresponding FEs in the `Experience_bodily_harm` frame. For example, both core FEs TIME and PLACE

of the Event frame are inherited by the Experience_bodily_harm frame in which they are realized as non-core FEs. Altogether, the Experience_bodily_harm frame inherits six FEs from Event.[104]

Using, the second frame-to-frame relation relevant to the Experience_bodily_harm frame, is a less formalized more associative relationship: "Often a particular frame makes reference in a very general kind of way to the structure of a more abstract, schematic frame. … the Using relation is used almost exclusively for cases in which a part of the scene evoked by the Child refers to the Parent frame." (Ruppenhofer et al. 2010: 79) In our example, the Experience_bodily_harm frame uses the Intentionally_act frame[105] in cases when the EXPERIENCER injures themselves on an INJURING_ENTITY, as in the sentence *He punched me, but he hurt his fist on my nose.*[106]

The different frame-to-frame relations structuring the hierarchy of frames in FrameNet can be visualized with the FrameGrapher tool, as in Figure 6.3.[107] The dark shaded[108] oval represents the Experience_bodily_harm frame, the frame for which frame-to-frame relations are displayed. The bold arrow pointing from Event to Experience_bodily_harm symbolizes the Inheritance relation between the two frames with Event being the "parent" frame and Experience_bodily_harm being

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[104] In addition to the core FEs, the Experience_bodily_harm frame inherits the non-core FEs DURATION, TIME, FREQUENCY and MANNER.

[105] The Intentionally_act is an abstract frame for acts performed by sentient beings. It exists mostly for FE inheritance. (https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Experience_bodily_harm&banner=).

[106] Example sentence from FrameNet (https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Emotions).

[107] FrameGrapher is the visualization tool for viewing the relations between frames and their frame elements (https://framenet.icsi.berkeley.edu/fndrupal/FrameGrapher).

[108] The oval containing the frame is colored green in FrameGrapher.

the "child" frame. The dotted arrow stands for Using relations: `Experience_bodily_harm` uses `Intentionally_act` and is in turn used by `Cause_harm`.

Figure 6.3: Frame-to-Frame Relations for `Experience_bodily_harm` Visualized by FrameGrapher

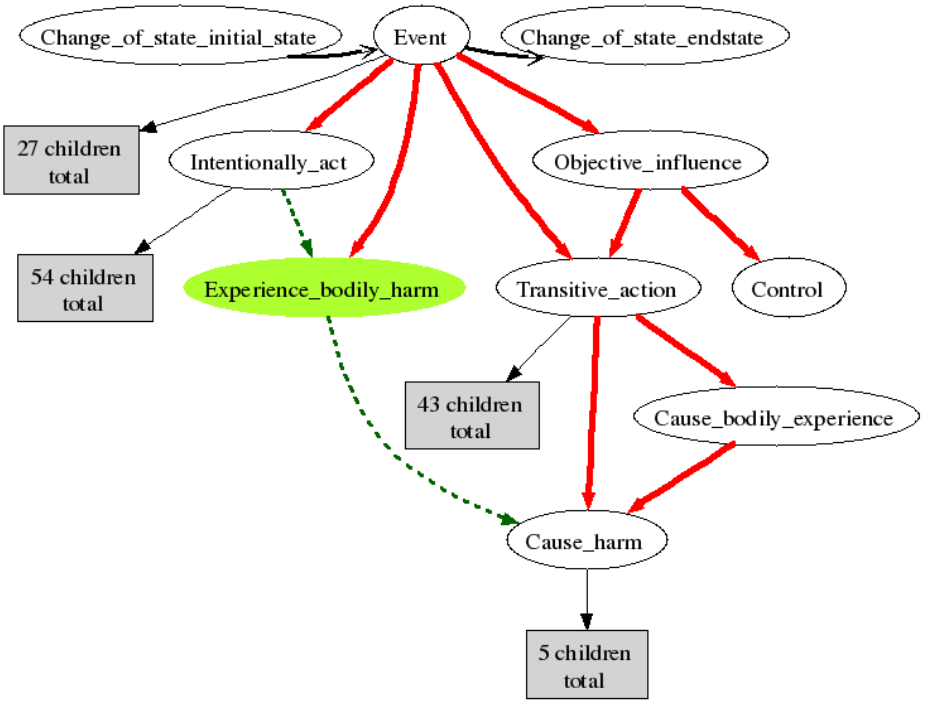

Figure (6.3) also illustrates nicely that the frames are organized as a part of a hierarchical network in which the frame-to-frame relations constitute the semantic links between the frames. In doing so, the FrameNet database is structured analogous to the mental lexicon. For example, Bybee (2013: 52) argues for "exemplar based models" of language that

> … propose that memory for linguistic experience is like memory for other types of experience: each token of experienced linguistic behavior has an impact on

> cognitive representation… In addition, memory storage for linguistic experience includes detailed information about the tokens that have been processed, including their form and the contexts in which they were used.

The tokens or exemplars in Bybee's sense correspond to the lexical units in FrameNet. Their form is recorded in the valence patterns (in the case of verbs), and the context information is modeled by the frame descriptions. Bybee (2013: 52) further argues that

> … the general categories and units of grammar can emerge from the experience that is recorded in memory because exemplars are categorized by similarity to one another and because contiguous experiences—such as meaning …—are recorded as linked to one another.

The emergence of general categories according to Bybee's model is reflected in FrameNet by the increasing abstraction of the frames at higher levels: every "parent" frame contains generalizations about its "child" frames, for example the `Transitive_action` frame in figure (6.3) is a generalization of 43 "child" frames in total, including the `Cause_harm` frame. The grouping of the `Transitive_action` frame with its 26 "sister" frames lead to an even more abstract level, the generalizing `Event` frame.

These models of language and language processing developed in cognitive linguistics aim for psychological reality (Langacker 2000: 2) and are therefore based on general psychological processes that

> … result in cognitive assemblies of enormous complexity. The vision that emerges is one of massive networks in which structures with varying degrees of entrenchment, and representing different levels of abstraction, are linked together in relationships of categorization, composition, and symbolization. (Langacker 2000: 5)

According to these theoretical insights, hierarchical networks are the best method for modeling linguistic knowledge. Organizing linguistic data in the form of networks allows us to study particular linguistic phenomena in connection with the psychological reality

and to draw conclusions about the structure of language and the mental lexicon. Such networks also allow us to incorporate different types of data because they can be extended as needed (see also Goldberg and Jackendoff 2004, Bybee 2007, Traugott 2008, and Boas 2010, 2011, among others).

I now turn to the network analysis of verb-PP$_{auf}$ constructions that builds on the frame-semantic analysis of verbs in FrameNet.

6.3 NETWORK ANALYSIS OF VERB-PP$_{AUF}$ COMBINATIONS

My analysis in chapter 5 did not return rule-based patterns of verb-PP$_{auf}$ combinations, from which I concluded that these verbs-preposition combinations are conventionalized and stored as multi-word units in the lexicon. However, as discussed in the previous section, the mental lexicon is not a collection of randomly ordered atomic linguistic items, but rather a highly structured storage of information that is organized in terms of a hierarchical network. In the subsections 6.3.1 to 6.3.4 I describe and examine selected verb-*auf* combinations in detail to determine how much generalization and abstraction occurs with regard to these patterns.

For my analyses I use the same data set as before (Table 4.3/Appendix B). I extracted three semantic subgroups of verb-*auf* combinations using FrameNet: verbs denoting joyful expectation, mental activity verbs denoting focusing, and mental activity verbs denoting expectations. The fact that I base my analysis of German verbs on FrameNet which was developed for English raises the question of its applicability to languages other than English, in particular to German. Boas (2005: 446) has shown that Frame Semantics is a common, largely language-independent word sense and role inventory, and, therefore, the "… FrameNet database … provides a solid basis for

conducting crosslinguistic research…".[109] Furthermore, the SALSA project (see Burchardt et al. 2006, 2009) demonstrated that FrameNet frames can often be used to annotate correctly the senses of German verbs. Only "…somewhat less than one third of the predicate senses in our corpus was not covered by FrameNet" (Burchardt et al. 2006: 3). The problems in the coverage of the FrameNet frames stem in part from the fact that some frames are language specific (Boas 2005) and in part from the incomplete status of the FrameNet database because it is still under construction.

For my analysis of the selected German verb-PP$_{auf}$ constructions, I followed the procedures used in the German SALSA project:

> For each instance, we check whether some FrameNet frame applies. The decision is based on the criteria detailed in detailed in Ellsworth et al. (2004): Does the meaning of the instance meet the frame definition? Can all important semantic arguments of the instance be described in terms of the frame elements? In cases of doubt, we also check annotated FrameNet example sentences for similar usages (Burchardt et al. 2006: 3).

I could identify an applicable FrameNet frame for most of the verbs I analyzed. In the cases where no such frame was available, I constructed a frame in order to capture the German data. For this purpose I identified a frame closely related to the lexical units in the German data (according to the criteria by Ellworth et al. (2004)) and created a new frame with a "child" relationship to the FrameNet frame. This means that the newly constructed frame has either an Inheritance relation to the "parent" frame when all FEs are realized, but they are more specific than the FEs in the parent frame (in the case of the frames `Joyful_expectation`, and `Mathematical_activity`), or the new

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[109] FrameNet projects are being developed for instance for German (SALSA - The Saarbrücken Lexical Semantics Acquisition Project at the University of the Saarland, Germany, http://www.coli.uni-saarland.de/projects/salsa/page.php?id=index; German FrameNet at the University of Texas at Austin, http://www.laits.utexas.edu/gframenet/), Spanish (Subirats and Petruck 2003), and Japanese (Ohara et al. 2004).

frame has a Using relation to the "parent" frame when only selected FEs are realized (the frame `Self-referential_mental_activity`).[110] I adapted the descriptions of the frames and the frame elements as far as possible to the FrameNet definitions. I turn now to the network analyses of the German verb-*auf* combinations.

6.3.1 Emotions: Verbs Denoting Joyful Expectation

In this section I analyze the two verbs in the verb list that denote joyful expectations, *sich freuen auf* ('to look forward to') and *brennen auf* ('to wait impatiently for sth.') (cf. 6.1).

(6.1) a. Ich bin wirklich zufrieden und
I.NOM am really pleased and
freue mich schon sehr auf
be- happy.1sg.pres REFL already very on
die Feier am Samstag.
the celebration on Saturday.
'I am really pleased and am already looking forward to the celebration on Saturday.'
BRZ05/DEZ.14011 Braunschw. Z., 14.12.2005

b. Ich brenne auf mein Comeback.
I.NOM burn on my comeback
'I very much look forward to my comeback.'
BRZ09/APR.04855 Braunschw. Z., 11.04.2009

The verbs *sich freuen auf* and *brennen auf* are lexical units that evoke the semantic frame `Joyful_expectation` in the context in (6.1).[111] I define this frame

[110] This procedure differs from the SALSA approach. The proto-frames newly constructed by SALSA are predicate-specific (Burchardt et al. 2006: 3).

[111] The frame `Joyful expectation` does not exist in FrameNet, probably because there is not a verb like *sich freuen auf* ('to look forward to') annotated in FrameNet yet that expresses expectation and happiness at the same time. The FrameNet frame `Expectation` contains expectation verbs like *anticipate*, *await,* and *expect* that do not have the positive emotional meaning component. Therefore, I used the German data to create this frame in my network according to the procedure described in section 6.3 in order to adequately describe the linguistic situation in German.

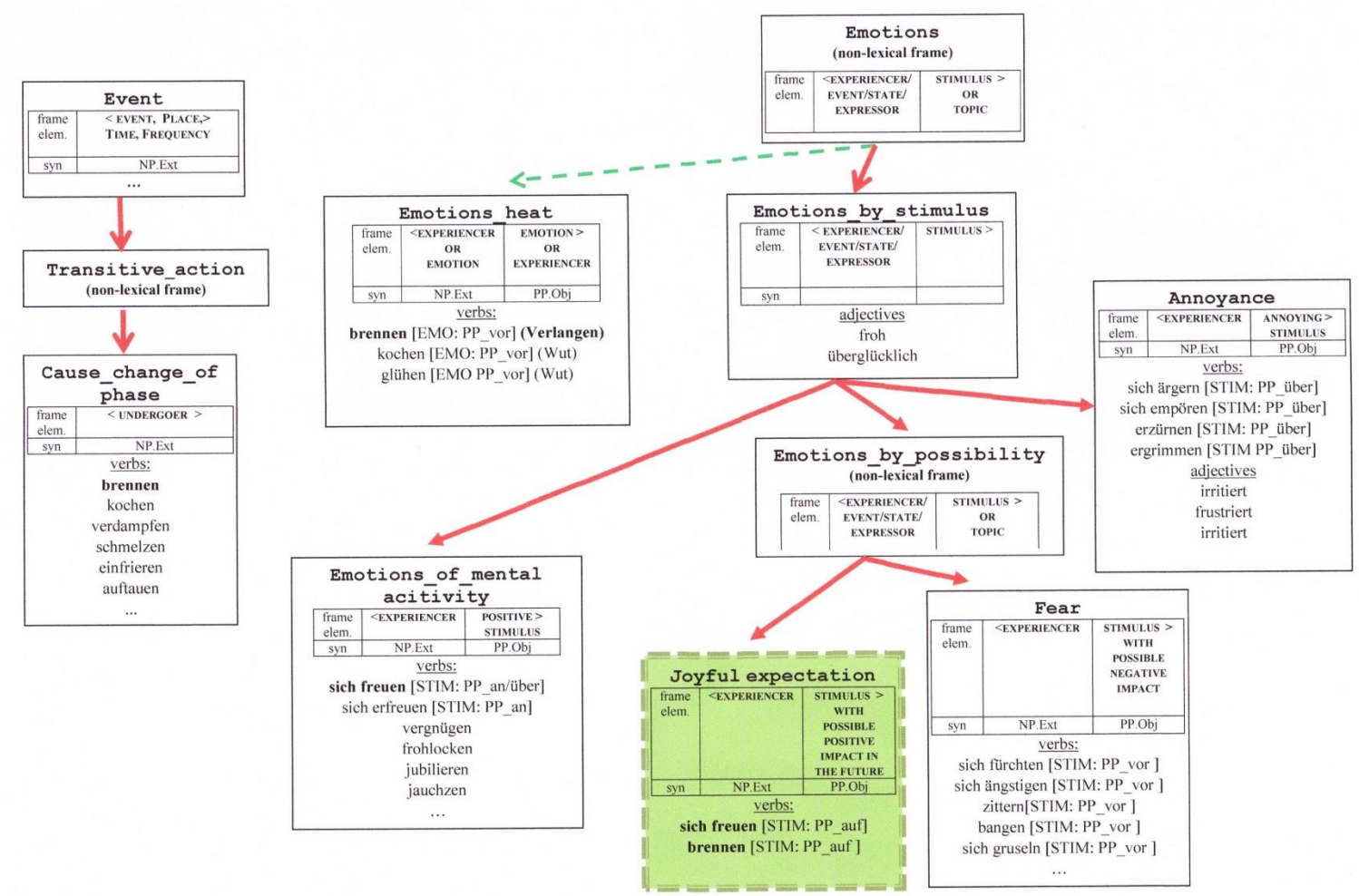
as follows: 'An EXPERIENCER has a positive emotion caused by a STIMULUS WITH A POSSIBLE POSITIVE IMPACT IN THE FUTURE'.[112] This frame and its position in the lexical-constructional network are visualized in figure (6.4) below.

The frame `Joyful_expectation`, which is evoked by the two verbs *sich freuen* and *brennen* at the bottom in figure (6.4), is marked with a bold, dotted line around the shaded box. The top of each box contains the name of the frame printed in bold face letters. Following the name is a boxed diagram which is parallel, but not identical, to the notation of constructions of Goldberg (1995, 2006). The diagram illustrates the combination of frame-semantic information and basic syntactic information of the lexical units evoking the frame, i.e. these are constructions at a very low abstraction level. I call them mini-constructions following Boas (2003). The two rows of the table provide the semantic (first row, "frame element") and syntactic (second row, "syn") description of these mini-constructions. The semantic level contains the core set(s) of frame elements.[113] As discussed in the introduction to FrameNet, the mini-constructions of the lexical units *sich freuen auf* and *brennen auf* contain two core FEs that correspond to the subject (NP.Ext) and the PP_{auf} (PP.Obj) of these verbs when realized in simple active sentences. These FEs are specific to each frame, not general semantic roles like AGENT or THEME used in Goldberg's analysis. The two core frame elements in the `Joyful_expectation` frame are the EXPERIENCER and the STIMULUS WITH A POSSIBLE POSITIVE IMPACT IN THE FUTURE (STIM). The syntactic level (second row in the table) provides the information how the frame elements are typically realized

[112] The definitions of the other relevant frames can be found in Appendix F.

[113] Using frame elements on the semantic level of the construction is in contrast to Goldberg (1995, 2006) who employs constructional semantic roles at this level. I use frame elements instead because my analysis is explicitly based on FrameNet.

Figure 6.4: Partial Semantic Network for Verbs of Joyful Expectation



syntactically: the EXPERIENCER is the subject (a noun phrase in nominative case, NP.Ext) and STIMULUS WITH A POSSIBLE POSITIVE IMPACT IN THE FUTURE is realized as prepositional phrase (PP.Obj). The specification of the particular preposition is given on the level of each lexical unit (e.g. [STIM: PP_auf]). I follow Goldberg's (1995) notation of printing obligatory frame elements in bold face letters and frame elements that do not need to be realized in normal font.

I employ Goldberg's box notation to show that each lexical entry of each lexical unit can be displayed in terms of a (mini-)construction, i.e. a pairing of form and meaning but they are not abstract argument structure constructions in Goldberg's sense. Examples of lexical units are provided in each box representing a lexical frame. Figure (6.4) shows that the verb *brennen* (printed in bold face letters in every frame it evokes) has three lexical units that can be identified in this partial network. In other words, *brennen* has (at least) three senses that evoke three different frames: the `Joyful_expectation` frame, the `Emotion_heat` frame, and the `Cause_change_of_phase` frame. The verb *sich freuen* has two lexical units evoking two frames, the `Emotions_of_mental_activity` frame in addition to `Joyful expectation`. However, only in the `Joyful_expectation` frame do both verbs combine with the PP_{auf}, which must be obligatorily realized to evoke this frame.

The frames in the network in figure (6.4) are connected by frame-to-frame relations, as discussed in section (6.2.2). The bold, continuous arrows symbolize Inheritance relations between a "parent" and a "child" frame. `Joyful_expectation` Inherits[114] two frame elements from the `Emotion_by_possibility` frame: the EXPERIENCER and the STIMULUS. `Emotion_by_possibility` and its "sister" frame

[114] I use the capitalized "Inherit" to refer specifically to the Inheritance relation.

Annoyance Inherit their core FEs from Emotion_by stimulus which in turn Inherits them from the Emotion frame. Upwards in this hierarchy, the frame elements are becoming more and more general as each "child" frame is a more specific instantiation of the "parent" frame, by definition. The frame Emotion_heat exhibits the frame relation Using vis-a-vis Emotions, i.e. a part of the scene evoked by Emotion_heat refers to the more abstract frame Emotions it is not simply a subtype of Emotions. The EMOTION and the EXPERIENCER are expressed, but there is no STIMULUS.

Non-lexical frames such as Emotion and Emotions_by_possibility are more abstract frames, i.e. they are generalizations that are used in FrameNet to build the hierarchical structure of the overall frame inventory, i.e. the lexicon (Ruppenhofer et al. 2010: 80). By implementing non-lexical frames, such a frame hierarchy models "[a] second basic [psychological] phenomenon, abstraction, [that] is the emergence of a structure through reinforcement of the commonality inherent in multiple experiences." (Langacker 2000: 4). The hierarchical structure of the network is nicely illustrated by figure (6.4). More concrete frames with lower levels of abstraction are on the bottom of the diagram and a higher hierarchy level within the network corresponds to a more generalized, abstract meaning of the frames.

Goldberg's (1995, 2006) abstract argument structure constructions are situated at a much higher level of the network. In contrast, the verb-PP$_{auf}$ combinations are located at the lowest level of generalizations, which explains why predictions are impossible but perceived similarities can be explained in terms of the systematic relations to other frames. For example, there is a perceived similarity in the uses of *brennen* in the Joyful_expectation frame (*brennen auf* 'to be waiting very impatiently') and the Emotion_heat frame (*brennen vor Verlangen* 'to burn with desire'), but it is very

hard, or even impossible to describe it with paraphrases. However, the network of frames presented above can account for this similarity by displaying the position and the relationship of the two frames evoked by the two senses of *brennen*. Figure (6.4) also shows that the third sense of *brennen* ('to undergo combustion') is not as closely related to the two other senses as they are to each other. Its position in the network explains why a decontextualized sentence such as *Trockenes Holz brennt gut* ('Dry wood burns well') is not associated with emotions: the lexical unit *brennen* in this example does not evoke a frame in the `Emotions` hierarchy.

However, since the network in figure (6.4) begins with generalizing frames at the bottom, it omits an important level: the level of the individual lexical units. As Boas (2010) shows, semantic differences reside already in the different syntactic realizations of one lexical unit within a semantic frame. He argues that "[e]ach of the individual (syntactic) valence patterns associated with an LU … can be regarded as the form side of a mini-construction…: a conventionalized form-meaning pairing that portrays the event described by the semantic frame from a very specific perspective" (Boas 2010: 68).[115] However, my dissertation pursues the question of how much generalization is possible for verb-PP$_{auf}$ combinations, meaning that an analysis of the lexical units at the most fine-grained level of mini-constructions is not strictly necessary. Since all the mini-constructions of one lexical unit evoke the same frame - the lowest level of generalization of different lexical units, such an analysis does not provide additional information about the position of each verb sense (LU) within the network and its relationship to the other LUs.

[115] These mini-constructions are one level below the mini-constructions mentioned above. As such, they could be called mini-mini constructions.

The discussion of the verbs *sich freuen auf* and *brennen auf* has shown that no predictions can be made as to which lexical units can evoke the `Joyful_expectation` frame, i.e. which verbs can combine with the preposition *auf* with the PP denoting a STIMULUS WITH A POSSIBLE POSITIVE IMPACT IN THE FUTURE. However, the semantic component labeled with somewhat fuzzy terms as futurity or future-orientation that previous research tried to isolate (Bouillon 1984, Eroms 1981, 1991, Rostila 2007) is not only preserved by incorporating these verbs into the hierarchical network of semantic frames, but it is also specified and described in more detail than otherwise possible. I now analyze two other groups of verbs that provide the basis for comparing the three groups of verb-PP$_{auf}$ combinations and to determine at what level in the frame hierarchy it is possible to capture any generalizations among them, i.e. what common meanings these three groups of verb-PP$_{auf}$ combination have.

6.3.2 Expectations: Verbs Denoting Expectation

The following lexical units evoke the frame `Expectation`: *warten auf* ('to wait for'), *hoffen auf* ('to hope for'), *zählen auf* ('to count on'), and *spekulieren auf* ('to speculate on') as illustrated by the corpus examples in (6.2).

(6.2) a. Sie warten auf bessere Zeiten.
they.NOM wait on better times
'They are waiting for better times.'
HAZ09/FEB.04168 HAZ, 24.02.2009, S. 2

b. In diesen Tagen hoffen die Vogelbeobachter auf
in these days hope the birders. NOM on
das Eintreffen der Nachtigall.
the arrival the nightingale.GEN
'The birdwatchers are hoping for the arrival of the nightingales these days.'
BRZ09/APR.04682 Braunschw. Z., 11.04.2009

c. Eine Strategie, auf die im Winter auch
a strategy.NOM on the.SG in-the winter also
Bussarde, Krähen und Möwen zählen.
buzzards, crows and sea gulls count
'A strategy that also buzzards, crows and sea gulls rely on during the winter.'
BRZ09/FEB.07538 Braunschw. Z., 16.02.2009

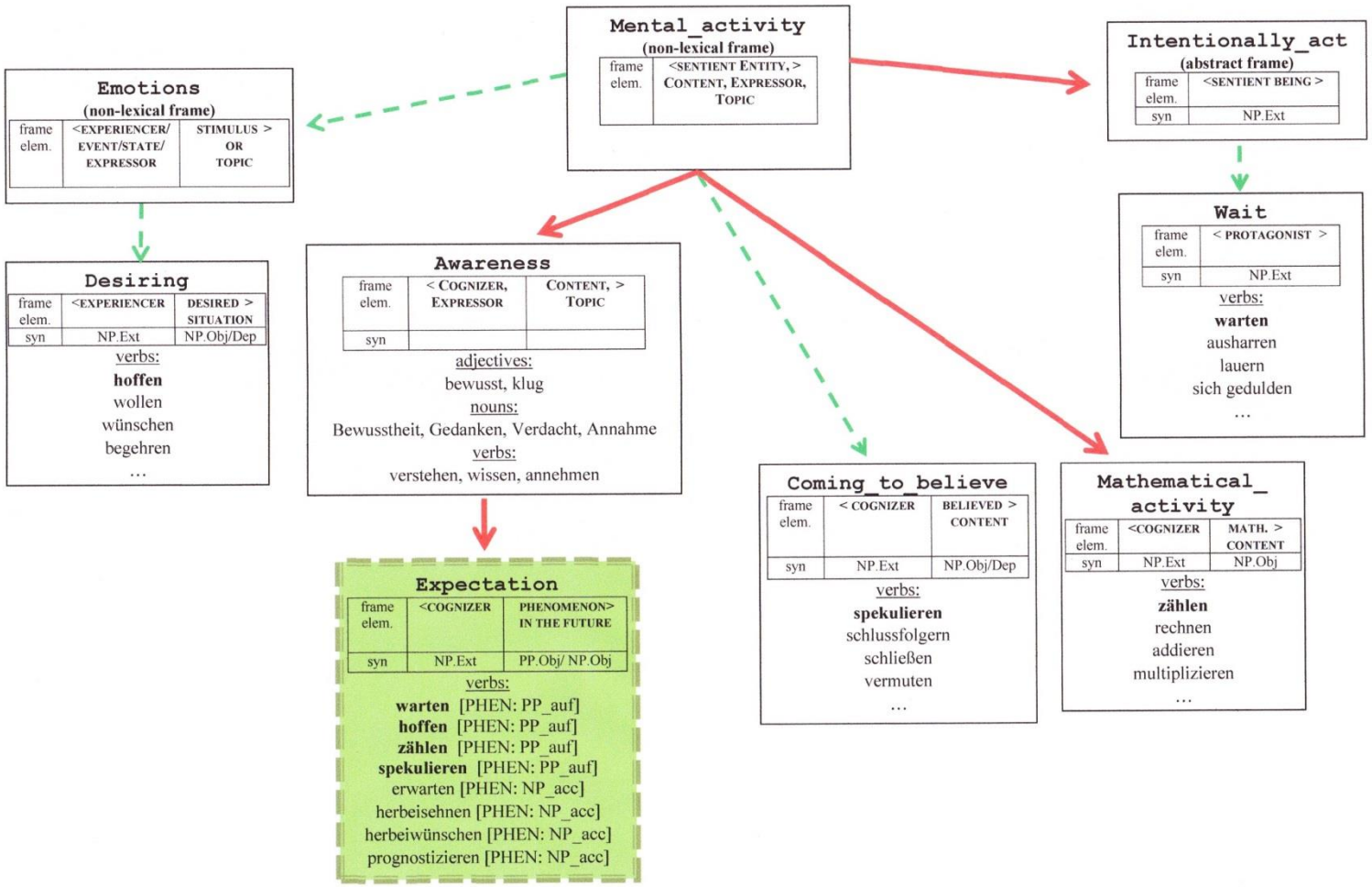
d. Erfolgreich spekuliert die Regisseurin
successfully speculates the female director
auf Schockeffekte.
on shock effects.
'The (female) director successfully speculates for shock effects.'
HAZ09/MAR.01455 HAZ, 09.03.2009, S. 13

The partial network containing this frame is illustrated in figure (6.5). The analysis of these verbs is parallel to the one in the previous section (6.3.1); the notation used in the network is the same as in figure (6.4).

The frame `Expectation` is defined in FrameNet as having "to do with a COGNIZER believing that some PHENOMENON will take place in the future. Some words in the frame (e.g. *foresee.v*) indicate that the PHENOMENON is asserted also to be true, while others do not." The core FEs are the COGNIZER (realized as NP.Ext) and the PHENOMENON (realized as NP.Obj or PP.Obj). The specific syntactic realization of the PHENOMENON ([PHEN]) is provided with each lexical unit below the boxed diagram, i.e. the FE PHENOMENON is realized as PP[auf].Obj denoted in the box as "warten [PHEN: PP_auf]."

The `Expectation` frame Inherits its core FEs (COGNIZER and PHENOMENON in the future (as more specific realization of CONTENT)) from the "parent" frame `Awareness` defined by FrameNet as follows: "A COGNIZER has a piece of CONTENT in their model of the world. The COGNIZER is not necessarily present due to immediate perception, but usually, rather, due to deduction from perceivables. In some cases, the

Figure 6.5: Partial Semantic Network for Verbs of Expectation



deduction of the CONTENT is implicitly based on confidence in sources of information (believe), in some cases based on logic (think), and in other cases the source of the deduction is deprofiled (know)."[116] The Awareness frame in turn is a "child" frame of the frame Mental_activity connected to it by the Inheritance relation. The FrameNet-definition of this frame reads: "In this frame, a SENTIENT ENTITY has some activity of the mind operating on a particular CONTENT or about a particular TOPIC. The particular activity may be perceptual, emotional, or more generally cognitive. This non-lexical frame is intended primarily for inheritance." Of the four inherited core FEs in the Awareness frame the COGNIZER is a more specific instantiation of the FE SENTIENT ENTITY in the Mental_activity frame.

Two other frames are related to the Mental_activity frame, Coming_to_believe, and Mathematical_activity.[117] The latter frame also Inherits (bold continuous line) from Mental_activity,[118] and the Coming_to_believe frame has a Using (dotted line) relation to its "parent" frame. We can see in these frames that they contain the (bold face) lexical units *spekulieren* and *rechnen* that are not realized with PP_{auf} in these environments. Thus, the lexical units *spekulieren* and *rechnen* are related at the same level of generalization, they all denote

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[116] The frame definition continues: "Note that this frame is undergoing some degree of reconsideration. Many of the targets will be moved to the Opinion frame. That frame indicates that the COGNIZER considers something as true, but the Opinion (compare to CONTENT) is not presupposed to be true; rather it is something that is considered a potential point of difference. In the uses that will remain in the Awareness frame, however, the CONTENT is presupposed."
(https://framenet.icsi.berkeley.edu/fndrupal/index.php?q=luIndex) This statement illustrates that FrameNet is an ongoing project where new pieces of information that arise from annotating more data can be integrated in the database.

[117] I constructed the Mathematical_activity frame as a special sub-case of the Mental_activity frame (Inheritance relation) according to the procedure described in section 6.3 because FrameNet does not yet contain the lexical units for *to calculate* and *to count* in a mathematical sense.

[118] Coming_to_believe has an Inheritance relationship to the Event frame, it only Uses the Mental_activity_frame, i.e.. only partially actualizes it.

mental activities. The verb *warten* has two different senses, one of which evokes the `Wait` frame which Uses the `Intentionally_act` frame (PROTAGONIST being a more specific instantiation of SENTIENT BEING).[119]

The lexical unit *hoffen* also evokes two frames in the partial network, the `Desiring` frame in addition to the `Expectation` frame. The `Desiring` frame is located in the thread of the network pertaining to emotions. Based on FrameNet's definition of the frame `Mental_activity`, in particular the statement that "the particular activity may be … emotional," I claim a Using relationship to the `Emotions` frame (`Mental_activity` is the "parent" frame, `Emotions` is the "child" frame with EXPERIENCER being a specific SENTIENT ENTITY). The frame `Emotions` in turn is the "parent" frame of `Desiring` via a Using relation.

From this hierarchy we can see that all senses visualized in this partial network are specific instances of mental activities, i.e. the most specific generalization we can make over the lexical units that are located in this network is that they are mental activities involving a sentient entity. Nevertheless, the visualization of the network illustrates nicely how the senses are related to each other and how they are integrated in our background knowledge. Now I turn to the last group of verbs.

6.3.3 Importance: Verbs of Focusing

The following verbs can be described as verbs of focusing: *konzentrieren auf* ('to concentrate on'), and *sich fokussieren auf* ('to focus on'). These verbs are lexical units that evoke the frame `Place_weight_on` when they are used in contexts such as in (6.3).

[119] The frame definition can be found in Appendix F.

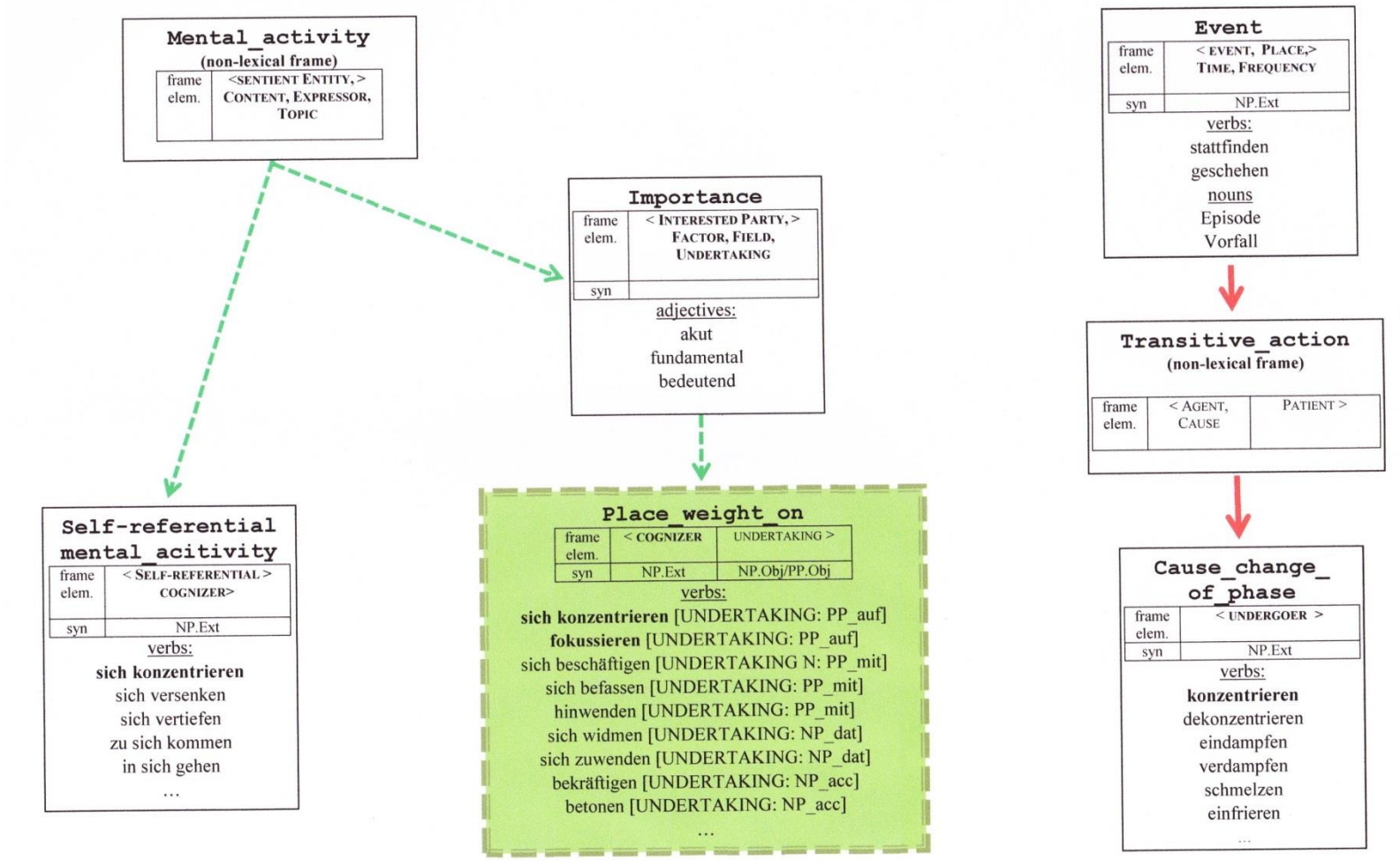
(6.3) a. Ich konzentriere mich zunächst
I. NOM contrate REFL at first
auf meine Frisörausbildung
on my hairdresser training
'At first, I concentrate on my training as hairdresser.'
BRZ09/JUN.11737 Braunschw. Z., 25.06.2009

b. Man muss sich auf das Wesentliche fokussieren.
one. NOM must REFL on the essential focus.INF
'One must focus on the essential things.'
HMP09/JAN.02091 MOPO, 28.01.2009, S. 32-33

The partial network containing this frame is illustrated in Figure (6.6). I analyze these verbs in parallel fashion to the previous two groups of verb-*auf* combinations; the notation used in the network diagram is the same as in Figures (6.4) and (6.5).

The lexical units *konzentrieren* and *fokussieren* in this context evoke the frame `Place_weight_on` that is defined in FrameNet as: "A COGNIZER who is engaged in an UNDERTAKING accords a DEGREE of importance to a CONSIDERATION that influences the success of an UNDERTAKING. As a consequence, the COGNIZER acts in a way that reflects that judgment of importance." This frame Uses (dotted arrow) the `Importance` frame with the following definition: "A FACTOR affects the outcome of an UNDERTAKING, which can be a goal-oriented activity or the maintenance of a desirable state, the work in a FIELD, or something portrayed as affecting an INTERESTED_PARTY. A REASON may be given for the importance of the FACTOR. The DEGREE of importance may also be specified." The "child" frame `Place_weight_on` Uses the two core FEs INTERESTED PARTY (specified as COGNIZER) and UNDERTAKING; the other core elements are not used and therefore no Inheritance relation exists. The FE UNDERTAKING ([Undertaking]) can be realized as PP_{auf} ([UNTERDAKING: PP_auf]), among other syntactic options. The `Importance` frame is in turn a "child" via the Using relation of `Mental_activity` that was discussed already in section 6.3.2 above.

Figure 6.6: Partial Semantic Network for Verbs in the `Place_weight_on` Frame



The only lexical unit in the Place_weight_on frame that evokes other frames within this partial network is the verb *konzentrieren* ('to concentrate'). *Konzentrieren* is found in the Cause_Change_of_phase frame discussed in section 6.3.1 while looking at the verb *burn*, as well as in the Self-referential_mental_activity frame.[120] The FE SELF-REFERENTIAL COGNIZER of the latter frame is a more specified instance of the Mental_activity frame's core FE SENTIENT ENTITY. Since this frame does not use any other core elements of the frame Mental_activity the relation between "parent" and "child" frame must be characterized as a Using relation. The Mental_activity frame and the Event[121] frame, the most general frames, are not connected by a more abstract generalization on a higher level on the network hierarchy in the diagram in figure (6.6), i.e. we construe the lexical units *sich konzentrieren,*and *fokussieren* in the Place_weight_on frame and *sich konzentrieren* in the Self-referential_mental_activity frame as belonging to one cognitive category, namely some kind of mental activity, while the lexical unit *konzentrieren*, evoking the Cause_change_of_phase frame is perceived as denoting events that do not necessarily involve an active agent.

Having discussed three partial networks containing frames that are evoked by verb-PP$_{auf}$ combination in the previous sections I now turn to the generalizations that can be made based on the previous analyses.

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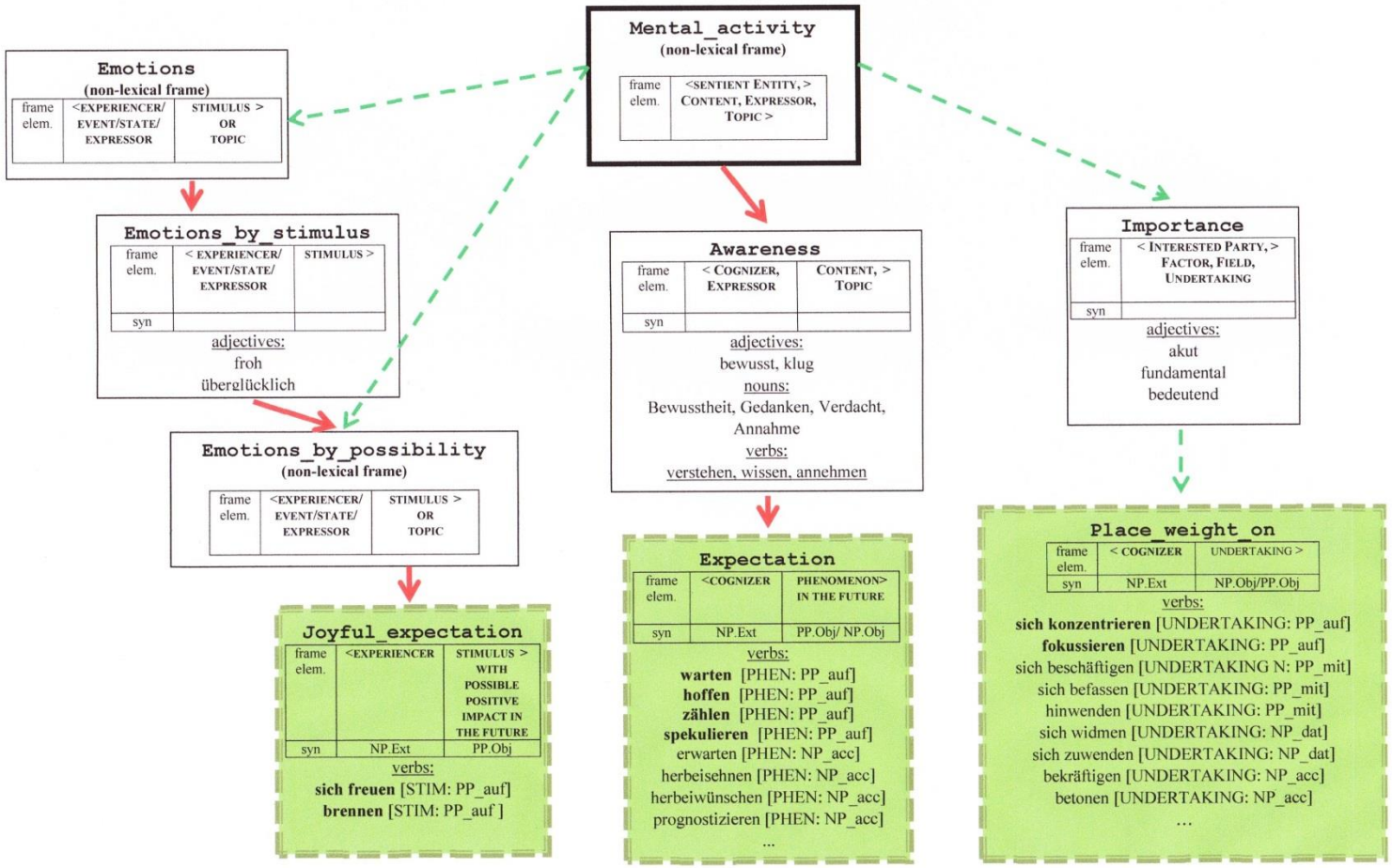
[120] I created the Self-referential_mental_activity frame as a specification of FrameNet's non-lexical Mental_activity frame and defined it as : A SELF-REFERENTIAL COGNIZER.is engaged in a mental activity focused on her/himself.

[121] In figure (6.6), the Event frame is the "parent" frame whose FEs are Inherited (bold, continuous line) by the "child" frame Transitive_action which in turn is "parent" through Inheritance to the "child" Cause_change_of_phase that contains the lexical unit *konzentrieren*.

6.3.4 Generalizations

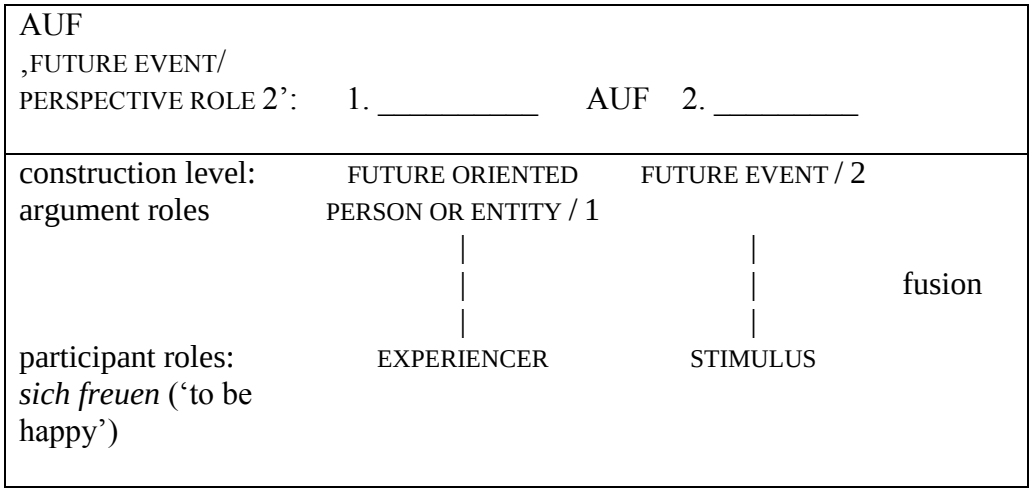
The three partial networks discussed in the previous sections can be combined in one network, as illustrated in figure (6.7). The three semantic frames `Joyful_expectation`, `Expectation`, and `Place_weight_on` containing the analyzed verb-PP$_{auf}$ combinations are located at the bottom of the diagram (shaded boxes with dotted outline); these three frames are semantic generalizations about the lexical units which evoke them – the verb-PP$_{auf}$ combinations among others – at the lowest level. All three frames can be generalized under the `Mental_activity` frame (in the box with the bold outline at the top level of the diagram) to which they are related by Inheritance (bold continuous line) and/or Using (dotted line) relationships. Figure (6.7) illustrates the semantic relationship of the lexical units *sich freuen auf*, and *brennen auf* (members of the `Joyful_expectation` frame) to *warten auf*, *hoffen auf*, *rechnen auf*, *spekulieren auf* (members of the `Expectation` frame): both groups of verbs are closely related to the `Mental_activity` frame, but the lexical units in the `Joyful_expectation` frame are also related to the semantics of emotion (stronger Inheritance relation to `Emotion_by_possibility` vs. weaker Using relation to the `Mental_activity` frame). Another similarity of the verbs in these two frames is that the second frame element of the mini-constructions is defined as being related to the future: the FE in the `Joyful_expectation` frame is defined as STIMULUS WITH POSSIBLE POSITIVE IMPACT IN THE FUTURE, the FE in the `Expectation` frame as PHENOMENON IN THE FUTURE. From this we can see that these verbs (as LUs evoking these two frames) do indeed share a future meaning component that previous research tried to capture by various ways of categorizing these verbs (e.g. Bouillon 1984, Eroms 1981, 1991, Lerot 1982, Rostila 2007). However, by employing semantic frames that correspond to the structured world knowledge that arises from general cognitive

Figure 6.7: Partial Semantic Network Combining the Frames `Joyful _expectation`, `Expectation` and `Place_weight_on`



processes according to Langacker (2000), we arrive at a much more precise idea about what this future component is (we can actually define it through the names of the FEs) than when only trying to describe our intuitions about the verbs. Furthermore, we can describe the differences between these two groups of verbs, also by contrasting the respective FEs. Besides the semantic difference between the second FEs STIMULUS and PHENOMENON, the first FEs (the subjects in simple active sentences) are also not identical in meaning. Whereas the subjects of the verbs *sich freuen auf* and *brennen auf* are described as EXPERIENCER, the subjects of verbs like *warten auf*, *hoffen auf*, *zählen auf* and *spekulieren auf* are categorized in terms of a COGNIZER. Finally, by describing the LUs within their frames as (mini) constructions, we can even locate the future meaning component in the syntactic structure. In the case of the analyzed verb-PP_{auf} combinations evoking the `Joyful_expectation` and the `Expectation` frames the futurity resides in the prepositional phrase headed by *auf*. Recall that "futurity" is exactly the meaning that Rostila (2007) claims as the defining feature for his partially schematic argument structure construction *auf*, repeated here for convenience as figure (6.8).

Figure 6.8: The *auf*-Construction according to Rostila (2007)



Rostila (2007: 176)

Comparing figure (6.8) with the partial network in figure (6.7), we see that the lexical-constructional network contains more detailed and more precise information about the distribution of each verb-PP$_{auf}$ construction and allows for more systematic and informative step-by-step generalizations upwards in the hierarchy of the network, thereby illustrating how individual lexical units (and their frames) share similar types of information. Furthermore, the network employing semantic frames and frame-to-frame relations connects linguistic information to world knowledge in a principled way. I propose that these are advantages compared to Rostila's argument structure construction.

However, even the proposed hierarchical network model with its high cognitive plausibility cannot make any predictions about the distribution of lexical units in the frames and their syntactic realizations, e.g. which verbs can combine with the preposition *auf* and evoke either the `Joyful_expectation` frame or the `Expectation` frame. In this respect it does not differ from Rostila's *auf* construction that did also not have predictive power which I demonstrated in chapter 5. This can clearly be seen from the

mini-constructions in the `Expectation` and `Place_weight_on` frames. The frame element PHENOMENON IN THE FUTURE in the `Expectation` frame can be realized on the syntactic level in various ways: as a prepositional phrase (PP.Obj) or as a noun phrase object (NP.Obj). The specification of the object type is made at the level of each lexical unit. In the `Place_weight_on` frame, which does not have a FE referring to future meaning, there are even more ways to realize the FE. The relevant frame element is UNDERTAKING and it can be realized as a noun phrase object (NP.Obj) either in the dative or in the accusative case ([UNDERTAKING: NP.dat] vs. [UNDERTAKING: NP.acc]) or as a prepositional phrase with different prepositions ([UNDERTAKING: PP_auf] vs. [UNDERTAKING: PP_mit]). This variety of syntactic realization possibilities noted in the constructions shows that although generalizations can be made, they do not have predictive power.

This observation leads to "[t]he question of the relation between item-specific and generalized knowledge" (Herbst 2011: 347).[122] Herbst argues that is desirable to have a theory that can integrate these two poles of language and he suggests synthesizing Goldberg's (1995, 2006) generalizing argument structure constructions with valency theory that can account for idiosyncrasies on the lexical level. According to Herbst, Goldberg's argument structure constructions provide a model to account for the creative use of language (as in the often cited example by Goldberg *Pat sneezed the napkin off the table*) while valency theory can tackle questions at the lexical level, e.g. production errors

[122] Herbst (2011) points out that these two poles of knowledge have traditionally led to two areas in linguistics: lexicology and lexicography, which are concerned with the properties of individual lexical items and syntax aiming to capture the general rules that generate language structure. This division has only recently been reconciled by Construction Grammar that developed the idea of a lexico-grammatical continuum (Fillmore 1982, 1985, Lakoff 1987, Goldberg 1995, 2006), as discussed in chapter 3. But see Boas (2010: 57) who argues that this separation between lexicon and syntax is even underlying Goldberg's (1995, 2006) proposal of abstract argument structure constructions.

in second language learning. Herbst (2011: 359) suggests combining the argument structure construction with a Valency Realisation Principle. This principle should work as a constraint in Goldberg-type constructions in the way that the valency information of each verb controls the fusion of the participant roles of the verb with the semantic roles of the construction. Stefanowitsch (2011: 384) makes a similar proposal: "Coming back to current models of construction grammar and valency grammar and the relation between them, I would … argue that a descriptively adequate construction grammar must absorb valency grammar, or vice versa. A combined model, incidentally, would not be dominantly one or the other, but it would be a true hybrid."[123]

The lexical-constructional networks based on Frame Semantics and FrameNet suggested in this chapter are exactly the "true hybrid" that Herbst (2011) and Stefanowitsch (2011) envision. The valency information of the lexical units is recorded in their valence tables, and the syntactic information is provided in the mini-constructions of lexical frames so that the syntactic patterns can be traced up the frame hierarchy to arrive at generalization suitable for the required purpose. The often discussed Caused-Motion construction (CAUSE-MOVE <**cause** goal **theme**>) introduced by Goldberg (1995: 152), for instance, corresponds semantically to the `Cause_motion` frame in FrameNet. Generalizations such as Goldberg's argument structure constructions can be arrived at by analyzing the syntactic realizations of the lexical units within this frame and related frames. The verb *sneeze*, for instance could be listed as a lexical unit in the `Cause_motion` frame and by comparison to other lexical units in that frame and in the

[123] However, Herbst states that even this combination of the two theories may not lead to complete predictability of the distribution of lexical items in constructions. To solve this problem, Herbst suggests using the generalizations as tools to predicts trends of the kind "if X, then probably/possibly Y". "This means that generalizations of this kind have a role to play in a probabilistic context – as a kind of cognitive scaffolding, which can certainly be used for decoding purposes … and which also helps to relate the instances to which it applies" (Herbst 2011: 358).

related frames patterns and subpattern could be identified and described in great detail that are captured by Goldberg (1995) in terms of constructional polysemy. Another advantage of the network analysis is the possibility of visualizing the frames and the containing units together with the mini-constructions, as well as the relations of the frames to each other.

The previous discussion of lexical-constructional networks and their relationship to other current theories leads me to claim that the network analysis as demonstrated in this chapter is a viable approach to investigate linguistic questions. They also conform to recent insights into the organization of language, and cognitive experiences in general (e.g. Bybee 2013, Langacker 1987, 2000, among others). I end by citing Langacker (2000: 29), who

> … concludes that idiosyncrasies … are readily described in a theory that posits only assemblies of symbolic structures for the characterization of lexical and grammatical structure… Moreover, … lower-level schemas, expressing regularities of only limited scope, may on balance be more essential to language structure than high-level schemas representing the broadest generalizations. A higher-level schema implicitly defines a large space of potential instantiations. Often, however, its actual instantiations cluster in certain regions of that space, leaving other regions sparsely inhabited or uninhabited altogether. An adequate description of linguistic convention must therefore provide the details of how the space has actually been colonized. Providing this information is an elaborate network of conventional units including both constructional subschemas at various levels and instantiation expressions with unit status. For many constructions, the essential distributional information is supplied by lower-level schemas and specific instantiations. High-level schemas may either not exist or not be accessible for the sanction of novel expression.

6.4 SUMMARY

This chapter started out with the claim that verb-PP$_{auf}$ combinations can be adequately captured within hierarchically structured networks as proposed by research in cognitive linguistics, Frame Semantics, and Construction Grammar (Boas 2010, Bybee 2013, Fillmore 1985, Fillmore and Atkins 1992, Langacker 2000, among others). I first introduced the lexical database FrameNet and the frame-to-frame relations that I employed in my analyses in order to support my claim. Next I analyzed three semantic clusters of verb-PP$_{auf}$ combinations that I identified in my German data set by using FrameNet. These three clusters are verbs denoting joyful expectation, verbs denoting expectation, and verbs of focusing. For each of these verb clusters I identified or constructed a frame in the FrameNet hierarchy and provided the hierarchical network of the analyzed verb-*auf* combinations and their near-synonyms, i.e. senses of these verbs that evoke different frames. Finally, I combined the three partial networks into one network containing all three groups of verbs to find a level of generalization. It turned out that the lowest level of generalization is their description as mental activities as the frames they evoke all relate to the frame `Mental_activity`. Based on my generalized network and the comparison to other approaches of capturing lexical information together with possible generalizations (Herbst 2011, Stefanowitsch 2011), I concluded that the proposed network analysis is a viable method for analyzing verb-PP$_{auf}$ constructions. The lexical-constructional network combines the advantages of lexical-based theories such as valency theory and Goldberg's generalized argument structure construction. It also adheres to the general principles of what is known about cognitive processes and the structure of the mental lexicon.

Chapter 7:

Conclusions

7.1 SUMMARY

This dissertation has been concerned with the analysis of verb-PP$_{auf}$ combinations in German. In order to determine whether general rules such as the partially schematic argument structure construction proposed by Rostila (2007) can account for their syntactic and semantic distribution in German, and, if need be, to develop an alternative model to capture the generalizations that can be made about these combinations.

Chapter 2 began with a discussion of the meaning of the preposition *auf* as described in several German dictionaries. I showed that there is no agreement about the semantic features that characterize the preposition *auf* in its lexical meanings. The meaning of *auf* in conventionalized verb-PP$_{auf}$ combinations is either simply labeled idiosyncratic or explained by perceived metaphoric extensions based on single examples. In a more systematic study, Bouillon (1984) aimed to determine the meaning of *auf* in such contexts by referring to a redundant semantic feature of the verb. He extracted these semantic features from examples based on intuition. I showed that his analysis is inadequat for arriving at semantic generalizations of *auf* in these constructions. The analysis of Breindl (1989) has shown that since generalizations over all verb-PP$_{auf}$ combinations are not possible, more attention needs to be paid to specific instances.

I also surveyed the research about PPs as argument phrases within generative theories (Fillmore 1968, Rauh 1993, Steinitz 1992, 1997), which treat the assignment of *auf* as a grammatical marker as an idiosyncratic feature of the verb that cannot be captured by generative rules. Rauh's (1993) analysis of these so-called "case prepositions" showed that in some cases the selection of *auf* is motivated by the lexical

meaning of the preposition, but even so, it is an idiosyncratic feature of the verb that cannot be captured by the general syntactic rules developed within generative theories.

Next, I reviewed the polysemy network of prepositions developed in cognitive linguistics (Brugman 1988a, Brugman and Lakoff 2006, Lakoff 1987, Tyler and Evans 2001, Meex 2001, and Liamkina 2007). I found that such polysemy networks are motivated by metaphoric relationships between several senses of a preposition to the central sense. However, the motivation of meaning extensions can usually not be taken to make generalizations about *auf* in verb-PP$_{auf}$ combinations. Furthermore, such analyses rely too much on personal intuitions and therefore do not yield testable or replicable results.

I concluded chapter 2 with the treatment of verb-PP$_{auf}$ combinations within valency theory (Heringer 1968, Eroms 1981, 1991, and Domínguez Vázquez 2005). Since valency-theoretical approaches project syntactic structures from the verb, they record the preposition in the particular lexical entry of the verb. In this way, it is possible to specify these verb-PP$_{auf}$ combinations at the lexical level, but generalizations about the semantics and the distribution of *auf* are not possible because the semantic level of the valency entries of verbs is too general, referring only to very abstract categories such as "entity" or "institution". Also, the semantic roles developed by Engel and used by Domínguez Vázquez are too coarse grained to allow for meaningful generalizations.

In Chapter 3, I introduced Construction Grammar (CxG), specifically Goldberg's (1995, 2006) argument structure constructions, which serve as the basis for Rostila's (2007) partially schematic argument structure construction headed by *auf* that provides the meaning component "future event" when fused with a suitable verb. Some counter-examples showed that Rostila's *auf* construction might be too unconstrained to account for the German data. I also discussed the main principles of Frame Semantics (Fillmore

1985), which provides the theoretical background for describing the meaning side of constructions by relating lexical items to contextual and world knowledge.

Chapter 4 introduced the principles of usage-based approaches (Kemmer and Barlow 2000) and corpus linguistic methodology in linguistic research. Based on these theoretical considerations, I used the parsed IMS-DeWaC corpus to extract a list of verbs that frequently occur with PP_{auf} by using the programming language Python. Considering that frequency correlates to entrenched usage patterns (Langacker 2000), I checked the 334 most frequent verbs for a sense that rests on the conventionalized verb-PP_{auf} pattern consulting E-VALBU and DWDS. This resulted in a list of 111 verbs subcategorizing for a PP_{auf} that served as the data basis for the verb studies carried out in chapters 5 and 6. I also introduced the DeReKo (German Reference Corpus) used as a data source in chapter 5 and 6.

In chapter 5 I set out to test systematically the validity of Rostila's (2007) partially schematic argument structure construction headed by *auf*. The goal was to determine which of the verb-PP_{auf} combinations can be described as a result of a fusion between the *auf*-construction with a base verb. Since Rostila claims that this construction adds a future meaning when combined with a verb, I selected all verbs from my data list that displayed a future meaning, in particular those in which the PP_{auf} must be construed as a future event. I developed a testing procedure for this purpose that yielded 27 possible instances of such a construction. I employed a method adapted from Proost (2009) to check the near-synonyms of these verbs to determine if they can all be combined with the *auf*-construction. The analysis resulted in a rejection of Rostila's *auf* construction and the conclusion that verb-PP_{auf} combinations are motivated conventionalized units that must be stored in the mental lexicon.

In chapter 6 I developed an alternative lexical-constructional network analyses of three groups of verb-PP$_{auf}$ combinations, namely verbs of joyful expectation, verbs of expectation, and verbs of focusing. In order to capture the semantics of the verb-PP$_{auf}$ combinations in the best possible way, these network analyses rest on the FrameNet database which in turn is based on the principles of Frame Semantics (Fillmore and Baker 2010). I described the main organizing principles of FrameNet and the frame-to-frame relations which were then applied to selected examples from my data set. Finally, I generalized the three partial networks for the selected verb-PP$_{auf}$ combinations in one lexical-constructional network that allowed comparing them with regard to their semantic similarities and differences. I showed that the verb-*auf* combinations of these three groups can be generalized based on the frame-to-frame relations in the network hierarchy as mental activities at the lowest level – a semantic description that they share with many other lexical items – but at the same time the semantic and syntactic similarities and differences within each group of verbs are described in detail by the frames these lexical units evoke: the `Joyful_expectation` frame, the `Expectation` frame, and the `Place_weight_on` frame. These frames are low-level generalizations about the lexical units that evoke them but they also contain detailed information about each individual lexical unit in the frame by providing their syntactic realization tables and their valence patterns that can be used for an even more fine-grained analysis of the mini-constructions (see also Boas 2010).

In my conclusions I argued that lexical-constructional networks are powerful tools for the detailed description of the meaning (including contextual as well as world knowledge) and the syntactic behavior of lexical items. Organizing them in a hierarchical network according to the well-defined principles established by the FrameNet project does not allow for predictions regarding their distributions, but it enables us to generalize

the data at the desired abstract levels while at the same time accounting for the most detailed information about each individual item thus avoiding Langacker's rule/list fallacy (Langacker 1987: 29). An additional advantage is the possibility to visualize these networks, which make the information even more accessible. Moreover, this model also adheres to what we know about cognitive processes and the organization of the mental lexicon as a vast amount of information that is hierarchically structured according to perceived similarities (Bybee 2013).

7.2 OUTLOOK

There are several suggestions for future research that might shed light on the meaning and the usage patterns of verb-PP combinations as well as on the semantics and distribution of prepositional phrases and prepositions as markers of verbal complements.

The first suggestion is to expand the investigation to include more verb-PP$_{auf}$ combinations. Using frames and FrameNet does not require preselecting verbs with subcategorized prepositional phrases; instead, all verbs are analyzed within the frame they evoke. The status of the prepositional phrase as subcategorized or not is captured by stating the frame element that is expressed by the PP as core or non-core FE. Core FEs correspond to what is termed in valency theory as obligatory and non-obligatory complements of the verb,[124] while non-core elements correspond to adverbial supplements in this theory.[125] In this way, the difficulties in defining solid criteria for the categorization of PPs can be avoided without losing information or descriptive power. On the contrary, additional information about the degree of conventionalization of verb-PP$_{auf}$ combinations fall out naturally by using this model. This indicates that the underlying

[124] Recall that non-core FEs do not need to be realized in all cases in the syntactic realization.
[125] Typical non-core FEs include PLACE, TIME, and MANNER, among others.

assumption of cognitive linguistics and Construction Grammar that lexicon and grammar form a continuum instead of discrete modules in the organization of language does not necessarily lead to problems in analyzing linguistic phenomena, but it can be integrated into the network model. Of course, this analysis can be extended to other prepositions which would make it possible to compare the prepositions denoting core FEs with each other. Generalizations regarding their usage patterns might become visible – or not thereby providing an answer to the question whether or not "meanings" of grammatical prepositions can be identified (Brinkmann 1971, Eroms 1981, 1991, Rauh 1993).

A second suggestion is to investigate the syntactic valence patterns of verb-PP combinations, i.e. the mini-constructions that according to Boas (2010: 66) present particular perspectives on the scene described by the frame. This information conveyed by the PPs would not only lead to insights and maybe generalizations about the realization of the PPs, i.e. as PPs or as pro-form for more complex syntactic structures in different contexts (Breindl 1989); it would also increase our understanding of pragmatic and register-specific usages and realizations of verb-PP combinations.

A third suggestion for future research would be the comparison of verb-PP combinations in different languages. This might be feasible because FrameNets are being developed for different languages. The ultimate goal should be to investigate verb-PP combinations in all their aspects to gain a full understanding of their meaning, distribution, and usage in different languages.

The final suggestion pertains to foreign/second language research and education. I concluded from the data analysis in chapter 5 that verb-PP$_{auf}$ combinations are conventionalized. In chapter 6 I provided a network that showed a generalization of some groups of these verbs as mental activities which is not a helpful level of abstraction for foreign/second language learners. This means that verb-PP combinations must eventually

be memorized like other vocabulary items. However, since the appropriate use of prepositions is a great problem for foreign/second language learners (cf. Rauh 1999) they might benefit from more precise information regarding the meaning and usage patterns of verb-PP combinations. Corpus studies could identify truly significant verb-PP_{auf} combinations for learners based on frequency.[126] Such an investigation should be register-sensitive, i.e. tailored to the needs of the learners (e.g. students of business German will need a different set of vocabulary than students in medical school), because language patterns differ considerably between registers (Biber 2000: 290). However, based on the detailed information available from such a proposed network analysis we can give the learners a very detailed and exact meaning description as well as provide them with the typical usage pattern(s) and examples. Furthermore, a list of near-synonyms with possibly easier syntactic realizations[127] will result from such a study more or less automatically.

[126] Frequency serves as a selecting factor, i.e. only the most frequent words should be learned at first as research in vocabulary acquisition has shown: "Studies of native speakers' vocabulary seem to suggest that second language learners need to know very large numbers of words. While this may be useful in the long term, it is not an essential short-term goal. This is because studies of native speakers' vocabulary growth see all words as being of equal value to the learner. Frequency based studies show very strikingly that this is not so, and that some words are much more useful than others" (Nation 2001: 9).

[127] By "easier syntactic realization" I refer to the learning burden of a word (Nation 1990), i.e. for verbs that have similar valence patterns in L1 and L2 the learning burden is lighter (Nation 2000: 22).

Appendix A

Translations of Table 2.1 from Chapter 2.

Table 2.1: The Locative Senses of the Preposition *auf* according to the Reviewed Lexical Resources (English Translation)

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
Senses of auf ('on')	**6**	**8**	**6**	**6**	**7**	**11**	**8**	**12**
locative, stative	contact *auf dem Zimmer* ('in the (hotel) room'), *auf dem Bahnhof* ('at the train station'), *auf der Hochzeit* (' at the wedding')	*auf dem Baum* ('on the tree'),*blind auf beiden Augen* ('blind in both eyes')	contact not goal-oriented *auf dem Baum* ('on the tree'),*auf der Straße* ('on the street'), *at the wedding* goal-oriented *auf den Baum* ('on(to) the tree'), *die Straße* (' the street'), die Hochzeit ('to the wedding')	position *auf dem Baum* ('on the tree'),*auf Arbeit* ('at work'), *auf der Uni* ('at college') direction *auf den Tisch* ('on(to) the table') derived *einer Sache auf den Grund kommen* distance *auf 50 Meter* ('on a distance of 50 meters')	contact, dative case *auf dem Bahnhof* ('at the train station') direction *auf den Baum* ('on(to) the tree') distance *auf 50 Meter* ('on a distance of 50 meters')	dative case horizontal contact *auf dem Tisch* ('on the table'), *auf dem Bahnhof* ('at the train station')	dative case contact *auf der Straße* ('on the street'), *Bahnhof* ('train station'), *Hochzeit* ('wed-ding')	high(er), contact *auf der 12. Etage* ('on the 12th floor'), *auf dem Bauch schlafen* ('to sleep on one's belly'), *auf dem Bahnhof* ('at the train station'), *auf das Fenster starren* ('to stare at the window')
locative, direc-tional		*auf etwas stoßen* ('to encounter sth.'), *Monat auf Monat* ('month by month')				acc. case *auf die Straße* ('on(to) the street'), *auf die Party* ('to the party Party'), *auf 50 Meter* ('on a distance of 50 meters'), *ins Zimmer* ('to the room')	acc. case *auf den Tisch lesgen* ('to place on the table'), *auf Reisen gehen* ('to go on a trip')	
hori-zontal direction							acc. case *auf jmd. zugehen* ('to approach someone')	
quasi-locative						dative case institutiona lized *auf der Konferenz* ('at the con-ference')		

Table 2.1 continued

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
locative, goal of move-ment	*zielen* ('to aim'), *hören* ('to listen to'), *achten auf* ('to focus on')							
final-locative			loc, institution *auf den/m Bahnhof* ('at/to the train station')					
locative, special forms						dative case temporary *auf Besuch* ('to be on avisit'), *auf dem Zimmer* ('in the room'), *auf der Suche* ('in search')		
instru-mental - locative						dative case horizontal, contact, instrument *auf der Maschine nähen* ('to sew on the machine')		

Table 2.2: The Temporal Senses of the Preposition *auf* according to the Reviewed Lexical Resources (English Translation)

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
temporal	sequence *auf Anfrage, Schlag auf Schlag* (‘blow for blow’) causal relation *auf etwas folgen* (‘to follow after’)	*auf die Minute genau* (‘to be on time exactly to the minute’)	point in time *auf der Konferenz* (‘at the confe-rence’), *Hochzeit* (‘wed-ding’) duration *auf längere Zeit* (‘for a longer time period’)	duration *auf 4 Jahre* (‘for 4 years’) sequence *auf etwas folgen* (‘to follow after’) point in time *auf Weihnach-ten* (‘on Christ-mas’) idiomatic *etwas auf Anhieb schaffen* (‘to get something done straight-away’), *auf die Minute genau* (‘to be on time exactly to the minute’)	duration *auf 4 Jahre* (‘for 4 years’) point in time (regional) *auf Ostern* (‘on Easter’) idiomatic *auf einmal* (‘sud-denly’). *die Nacht auf Freiag* (‘the night to Friday’), *Schlag auf Schlag* (‘blow for blow’)	*auf 4 Jahre* (‘for 4 years’), *auf einmal* (‘sud-denly’)	simultan. *auf der Wande-rung* duration *auf 4 Tage* (‘for 4 days’) period between 2 events *von Montag auf Dienstag* (‘from Monday to Tuesday’) successive events *auf etwas folgen* (‘to follow after’) phrases *auf Wieder-sehen*	prospective duration *auf 4 Tage* (‘for 4 days’) prospective point in time *auf morgen verlegen* (‘to postpone to tomorrow’) prospective time specificat. *auf 4 Uhr gehen* (‘4 o’clock is approachin g’), *von Montag auf Dienstag* (‘from Monday to Tuesday’) simultan. +organized human positive activity *auf der Konferenz* (‘from Monday to Tuesday’), *Hochzeit* (‘wed-ding’)

Table 2.3: The Causal, Modal, and Final Senses of the Preposition *auf* according to the Reviewed Lexical Resources (English Translation)

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
causal			*auf Anregung* (‘at someone’s suggestion) , *Rat von X* (‘on advice of X’)	conse-quence, result *auf Bestellung* (‘on demand’), *auf sein Zeichen* (‘on his sign’)	*antworten auf* (‘to reply to’), *auf Wunsch* (‘if desired’)	*auf Wunsch* (‘if desired’), *Befehl* (‘on command’)	accusative case *auf Befehl* (‘on command’)	+human activity allowing reaction *auf Anregung von X* (‘at X’s suggestion)
modal	*auf diese Weise* (‘in this way’), *auf Deutsch* (‘in German’)	*aufs Beste* (‘in the best possible way’), *auf Deutsch* (‘in German’), *auf Raten kaufen* (‘to buy in install-ments’)	*auf die Minute genau* (‘to be on time exactly to the minute’), *Schlag auf Schlag* (‘blow for blow’), *auf Deutsch* (‘in German’), *auf einmal* (‘all at once’)	*auf Staats-kosten leben* (‘to live on the public’s dime’), *aufs Beste* (‘in the best possible way’), *auf den Tod krank* (‘to be deadly ill’)	*auf Deutsch* (‘in German’)	*auf bestimmte Weise* (‘in a particular way’), *auf Gedeih und Verderb* (‘at mercy’), *auf Staatskoste n bauen leben* (‘to build on the public’s dime’), *auf die Minute genau, auf Deutsch*	modality auf Detusch measureme nt *auf die Minute genau,* (‘to be on time exactly to the minute’) *3 Tropfen auf 1 Glas* (‘3 drops per 1 glass’)	*auf diese Weise* (‘in this way’) , *auf Deutsch* (‘in German’)
final				purpose, goal auf Abbruch verkaufen, etwas auf etwas überprüfen	*goal, purpose, wish auf Hasen jagen, auf Zeit spielen, auf sein Wohl*	*auf Jagd, Montage gehen, auf Urlaub,auf ein Bier, auf sein Wohl*	purpose, goal *auf sein Wohl* (‘to your health’)	

Table 2.4: Other Senses of the Preposition *auf* according to the Reviewed Lexical Resources (English Translation)

Diction-aries	**Paul**	**Wahrig**	**Helbig/ Buscha**	**DWDS**	**Duden**	**Schrö-der**	**DaF Kempcke**	**Bouillon**
measure/ distribu-tion			*3 Tropfen auf 1 Glas* (‘3 drops per 1 glass’)		*3 Tropfen auf 1 Glas* (‘3 drops per 1 glass’)	*3 Tropfen auf 1 Glas* (‘3 drops per 1 glass’)		point on scale *Wecker auf 4 Uhr stellen* (‘to set the alarm for 4 o’clock’) proportion *3 Tropfen auf 1 Glas* (‘3 drops per 1 glass’)
proxy						*Tickets auf den Namen ‘Müller’ reervieren* (‘to reserve tickets on the name Müller’)		
special func-tions				measure *3 Tropfen auf 1 Glas bis auf* subcat frames V, N, A + auf *achten* (‘to focus on’), *vertrauen* (‘to trust in’), *hören* (‘to listen to’) *auf* (‘on’)	subcat frames V, N, A + auf *sich freuen auf, beruhen auf* (’to be based on ‘)			
idio-matic phrases		*auf seinen Rat hin* (‘on his advise’), *von klein auf* (‘from a very young age’)						

Table 2.4 continued

not labeled		*achten* (‘to focus’), *hoffen* (‘to hope’), *warten* (‘to wait’), *auf Besuch* (‘to be on a visit’), *Arbeit* (‘at work’), *die Uni gehen* (‘to go to college’)					*V, N, A + auf* (‘on’) *warten* (‘to wait’) *stolz sein* (‘to be proud of’, *Recht auf* (‘right to’)	
not-sub-stitutable P_{auf}:								7 groups with redundant meaning *

* 1. foundation: *basieren auf etwas* (‘to be based on sth.’)
2. future: *stoßen* (‘to push’) *hoffen* (‘to hope’), *freuen* (‘to enjoy’), *verzichten* (‘to abstain’), *trinken auf jemanden/etwas* (‘to raise the glass on someone/sth.’)
3. final point of direction: *zeigen* (‘to point’), *anspielen* (‘to allude to sth.’), *zurückführen auf jemanden/etwas* (‘to ascribe sth. to someone/sth.)
4. final point of transition: *überweisen* (‘to transfer’), *übertragen* (‘to transmit’), *verfallen auf etwas* (‘to come up with sth.)
5. goal of cognitive movement: *schimpfen* (‘to rail’), *böse sein auf jemanden* (‘to be mad at someone’)
6. result: *reagieren* (‘to react’), *einlassen* (‘to engage in sth.’), *eingehen auf jemanden/etwas* (‘to agree to sth.’)
7. measurement: *verlängern* (‘to extend’, *beschränken* (‘to confine’), *entscheiden auf etwas* (‘to decide on’)

Appendix B

Table 4.3: Verbs with Subcategorized PP_{auf} + NP_{ACC} from the DeWaC-IMS Corpus

#	**Verb (# of senses)**	**Frequency**	**Senses with *auf***	**Example NPs in accusative case**
1	kommen (45)	28,144	1. 'to achieve sth.'	Monatslohn ('monthly salary'), Arbeitsstunden ('work hours')
			2. 'to compute sth.'	Teilnehmer ('participants'), Betrag ('amount')
			3. 'to be allotted to sth.'	jeden Bürger ('every citizen'), drei Morde ('three murders')
2	setzen (9)	27,854	'to rely on'	Kohle ('coal'), praktische Zusammenarbeit ('practical cooperation')
3	verzichten	25,616	'to abstain from sth.'	die Kandidatur ('candidacy'), die Erbschaft ('inheritance')
4	sich beziehen (3)	20,162	1. 'to refer to sth.'	das Gespräch ('the communication'), die menschliche Natur ('the human nature')
			2. 'to relate to sth.'	die amerikanische Verfassung ('the American constitution'), die Kunst der Antike ('the art of the ancient world')
			3. 'to pertain to sth.'	sein Verhalten ('his behavior'), alles Weibliche ('everything female')
5	bringen (15)	19,535	's.o./sth. causes s.o. to have an idea'	die Spur ('the track'), den Mörder ('the murderer')
6	sich beschränken	19,503	'to limit s.o./sth.'/ 'to restrict sth./s.o.'	zehn Minuten ('ten minutes'), ein Mindestmaß ('a minimum')
			'to limit oneself to sth.' (refl.)	das Wesentliche ('the essential'), dürftige Mahlzeiten (‚frugal meals')
7	hinweisen (2)	19,377	'to point at s.o./sth.'	das Haus ('the house'), den Polizisten ('the police officer')
			'to advise s.o. of sth.'	einen Fehler ('a mistake'), die Notwendigkeit einer Steuersenkung ('the necessity to lower the taxes'), strukturelle Missstände ('structural deficits')
8	reagieren (3)	18,758	'to react/respond to s.o./sth.'	den Brief ('the letter'), die anhaltende Arbeitslosigkeit ('the ongoing unemployment')
			'to show a reaction to s.o./sth.'	Erdbeeren ('strawberries'), die Temperatur ('the temperature')
9	stoßen (14)	17,748	'to encounter s.o./sth.'	einen alten Bekannten ('an old acquaintance'), Methan ('methane')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
10	sich konzentrieren (4)	16,935	'to concentrate on s.o./sth.'	seine Arbeit ('his work'), die wirklich Hilfsbedürftigen ('the people who are in need')
			'sth. is geared to s.o./sth.'	24 Stunden im Leben des Pontius Pilatus ('24 hours in the life of Pontius Pilate'), sein Haus ('his house')
11	warten (5)	15,094	's.o./sth. is waiting for sth.'	dich ('you'), Hilfe ('help')
			'sth. is waiting for something to happen'/'sth. needs to be done to sth.'	eine Wäsche ('a load of laundy'), Erledigung ('handling')
			'sth. is waiting for s.o.'	die Besucher ('the visitors'), die Ermittler ('the detectives')
12	verweisen (8)	13,508	'to point/refer to sth.'	das Buch ('the book'), den nächsten Parkplatz ('the next parking lot')
13	eingehen (8)	13,083	'to respond to sth./s.o.'	Ängste und Bedenken ('fears and concerns'), die Wünsche der Zuschauer ('the wishes of the audience')
			'to go into sth.'	die Anfänge der ersten Siedlungen ('the beginnings of the first settlements'), die Ereignisse und Entwicklungen im letzten Jahr ('the events and developments in the previous year')
			'to agree to sth.'	den Vorschlag ('the suggestion'), das Angebot ('the offer')
14	vorbereiten (4)	12,202	'to prepare s.o. for sth.'	auf die Prüfung ('the exam'), den neuen Bus ('the new bus')
			'to get ready for sth.'	weitere Preissteigerungen ('further increases of the price'), eine Kürzung der Mittel ('financial cuts')
15	zurückführen	10,715	'to attribute sth. to sth.'	einen Reifendefekt ('a defective tire'), Fahrlässigkeit ('negligence')
			'to trace sth. back to sth.'	seinen Ursprung ('his origin'), ein lateinisches Wort ('a Latin word')
16	sich auswirken (4)	10,475	'to affect s.o./sth.'	das körperliche Wohlbefinden ('the physical well-being'), den Arbeitsmarkt ('the job market')
17	übertragen (8)	9,490	'to transfer sth. to sth.'	andere Kunstgebiete ('other areas of creative or artistic work'), die dortigen Verhältnisse ('the conditions there')
			'to carry sth. over'	die Mannschaft ('the team'), das Publikum ('the audience')
			'to transmit a desease'	weitere Personen ('more people'), mich ('me')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
18	treffen (8)	8,954	‘to encounter s.o./sth.‘	einen alten Bekannten (‘an old acquaintance’), einen starken Gegner (‘a strong opponent’)
19	ankommen (es) (2)	8,806	‘s.o./sth. is important for sth./s.o.‘	gute und fleißige Mitarbeiter (‘good and diligent co-workers’), die Größe des Geschenks (‘the size of the present’)
			‘to depend on s.o./sth.’	die richtige Pfanne (‘the right frying pan’), eure Mitarbeit (‘your collaboration’)
20	zurückgreifen (2)	7,926	‘to fall back on sth./s.o.’	seine Ersparnisse (‘his savings’), Vorbilder (‘role models’)
21	hoffen (2)	7,827	‘to hope for sth.’	eine bessere Zukunft (‘a better future’), einen energischen Schiedsrichter (‘a resolute referee‘)
22	zurückgehen (4)	7,790	‘to trace back to sth./s.o.’	einen Irrtum (‘a mistake’), die Aussagen eines einzigen Mannes (‘the statements of one man‘)
			‘to draw on sth./s.o.‘	die ältesten Quellen (‘the oldest sources’)
23	stützen	7,670	‘to lean on s.o./sth.’’	gefälschte Dokumente (‘forged documents’), frühere Forschungsergebnisse (‘previous research results’)
24	stehen (22)	7,422	‘to be into sth./s.o.’	die Pop-Gruppe Tote Hosen (‘the pop band Tote Hosen’), kitschige Sonnenuntergänge (‘cheesy sunsets‘)
			‘to be punished with sth. (law) for sth.’	Mord (‘murder’), dieses Verbrechen (‘this crime’)
25	zielen (3)	6,188	‘to aim for sth./s.o.’	eine Stärkung des Selbstwertgefühls (‘a strengthening of the self esteem‘), junge Käufer (‘young consumers’)
26	sich berufen (5)	5,926	‘to refer to s.o./sth.‘	die Tradition Mozarts (‘Mozart’s tradition’), den Koran (‘the Koran‘)
27	sich belaufen (3)	5,564	‘to amount to’	Milliarden (‘billions’), neun Semester (‘nine semesters’)
28	bestehen (6)	5,275	‘to insist on’	seldom accusative case, more often dative case/ absolute Ruhe (‘absolute silence’), einen Ehevertrag (‘a prenuptial agreement’)
29	wirken (7)	5,119	‘to cause a reaction in s.o./sth.‘	alle (‘everyone’), den Schlaf (‘the sleep’)
30	sich einlassen (5)	4,999	‘to get into sth.’/‘to get involved with s.o.’	ein gefährliches Abenteuer (‘a dangerous adventure’), einen Kompromiss (‘a compromise‘)

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
31	sich einigen	4,695	'to agree on sth./s.o.'	einen Kompromiss ('a compromise'), keinen Kandidaten ('no candidate')
32	anwenden	3,860	'to apply sth. to sth.'	eine veränderte Situation ('a changed situation'), alle Arbeitnehmer ('all employees')
33	einstellen (7)	3,846	'to adjust sth./to sth.'	das Morphin ('the morphine'), die Erfordernisse der Tour de France ('the requirements of the Tour de France')
34	sich verlassen	3,742	'to rely on s.o./sth.'	mich ('me'), seine Worte ('his words')
35	sich freuen (3)	3,376	'to look forward to'	meinen nächsten Urlaub ('my next vacation'), den Euro ('the euro')
36	hindeuten	3,305	'to indicate sth.'	Brandstiftung ('arson'), einen Witterungsumschwung ('a change in the weather pattern')
37	(sich) spezialisieren (2)	3,037	'to specialize on sth.'	die Herstellung von Harmonikas ('the production of harmonicas'), Mikrobiologie ('micro biology')
38	abzielen (2)	2,839	'to be aimed at'	das Privatleben ('the private life'), das US-Bankensystem ('the banking system of the U.S.')
			'to intend sth.'	die Gleichberechtigung ('equal rights'), eine prinzipielle Revision der Psychoanalyse ('a revision of the psycho analysis in principal')
39	einwirken	2,673	'to act on sth./s.o.'/ 'to affect sth./s.o.'	Konfliktparteien ('conflicting parties'), kriminelle Kinder und Jugendliche ('criminal children and youths')
40	(sich) festlegen (2)	2,551	'to commit (oneself) to sth.'	konkrete Ziele und Zeitpläne ('concrete goals and time schedules'), zwei Kandidaten ('two candidates')
41	sich richten (5)	2,391	'to aim at sth./s.o.'	sein Interesse auf die neue Arbeit richten ('to aim one's interest at the new job'), große Erwartungen richten sich auf ihn ('high expectations are aimed at him')
42	hinauslaufen (3)	2,344	'to amount to sth.'	die Umstrukturierung des Betriebs ('the restructuring of the company'), persönliche Motive ('personal motives')
43	aufbauen (5)	2,299		also with dative case; diese Leistung ('this performance'), bereits vorhandene Erfahrungen ('already established experiences')
44	ansprechen	1,979	'to react to sth.'	das Licht ('the light'), die üblichen Antibiotika ('the usual antibiotics')
45	umstellen (3)	1,840	'to adapt to sth.'/'to change sth. to sth.'	Gas ('natural gas'), ökologischen Anbau ('ecological farming')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
46	vertrauen (2)	1,810	'to trust in sth./s.o.'	seine Liebe (‚his love'), Gott ('God')
47	abstellen (5)	1,801	'to orient s.o./sth. toward sth.'	das gleiche Thema ('the same topic'), den lokalen Bedarf ('the local needs')
48	achten (6)	1,728	'to mind sth.'	ihr Gewicht ('their weight'), eine gesunde Ernährung ('a healthy diet')
			'to attend to s.o./sth.'	ihren kleinen Sohn ('her little son'), ihre Garderobe ('her attire')
			'to pay attention to s.o./sth.'	das Preisschild ('the price tag'), eventuelle Veränderungen ('potential changes')
			'to bear sth. in mind'	die Umweltverträglichkeit ('environmental safety'), die Ampel ('the traffic light')
49	anlegen (8)	1,523	'to at s.o./sth.'/'to angle for sth./s.o.'	ihn ('him'), eine direkte Konfrontation ('a direct confrontation')
50	dringen/drängen (3)	1,491	'to insist on sth.'	Einhaltung der Regeln ('compliance to the rules'), eine schnelle Entscheidung ('a quick decision')
51	zurückkommen (2)	1,486	'to come back to sth.'	dieses Argument ('this argument'), Ihr Angebot ('your offer')
52	bauen (7)	1,446	'to base sth. on sth.'	falsche Prämissen ('wrong assumptions'), eine solide Berufsausbildung ('a solid professional training')
			'to rely on s.o./sth.'	seinen Sohn ('his son'), den Tourismus als Devisenquelle ('the tourism as source of foreign currency')
53	sich besinnen (2)	1,434	'to recollect sth.'/ 'to bethink oneself of sth.'	ihre alten Kernkompetenzen ('their old core compentences'), seine schöpferischen Anfänge ('his creative beginnings')
54	deuten (2)	1,384	'to indicate sth.'	(also *hindeuten*); eine neurologische Katastrophe ('a neurological catastrophy'), französische Täter ('French delinquents')
55	schieben (5)	1,377	'to make s.o./sth. responsible'	eine Lehrer ('your teachers'), die ungünstigen Umstände ('the bad circumstances')
56	gründen (3)	1,277	'to base sth. on s.o./sth.'	also with dative case; einflussreiche Mitarbeiter ('influencial co-workers'), ihre Fähigkeit ('her skill')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
57	hinwirken	1,193	'to aspire sth.'/ 'to work towards sth.'	die Verbesserung der Wohnverhältnisse ('the improvement of the living conditions'), die Integration von Behinderten und Ausländern ('the integration of disabled persons and foreigners')
58	hinarbeiten	925	'to work toward sth.'	die gleichen Ziele ('the same goals'), die Wiedervereinigung Deutschlands ('the reunification of Germany')
59	verwenden (4)	912	'to spend (e.g. time or money') on s.o./sth.	unsere Kinder ('our children), seine Pflichten und Aufgaben ('his duties and tasks')
60	aufpassen (2)	877	'to attend to s.o./sth.'	die Kinder ('the children'), den Blutdruck ('the blood pressure')
61	sehen (17)	840	'to pay attention to s.o./sth.)'/'to make a point of sth.'	Pünktlichkeit, Ordnung und Disziplin ('punctuality, order, and discipline'), Geld ('money')
62	pochen (6)	831	'to insist on sth.'	sein Recht ('his rights'), Zahlung ('payment')
63	zählen (11)	829	'to count on sth./s.o.'	die Solidarität und Unterstützung ('solidarity and support'), Projekte im Bereich erneuerbarer Energien ('projects regarding renewable energies')
64	rechnen (10)	733	'to rely on s.o./sth.'	die Unterstützung der Nachbarstaaten ('the support of the bordering countries'), dich ('you')
65	anspielen (4)	729	'to allude to sth.'/ 'to hint at sth.'	Skandale ('scandals'), den Vorfall ('the incident')
66	einstimmen (3)	704	'to prepare s.o./ oneself for sth.'/'to get in the mood for sth.'	Weihnachten ('Christmas'), den Wahlkampf ('election campaign')
67	übergreifen (3)	675	'to encroach on sth.'	die Leber ('the liver'), den Dachstuhl ('the roof structure')
68	lauten (2)	578	'to be' (in legal contexts'	Mord ('murder'), Freispruch ('verdict of not guilty')
69	zurückfallen (5)		'sth. negative falls back on the originator'	seine Eltern ('his parents'), den Verursacher ('the causer')
70	orientieren (5)	552	'to be aimed at sth.'	höchste Qualität ('highest quality'), den Zeitraum des nächsten Jahres ('the time span of the next year')
71	einschlagen (11)	499	'to batter at s.o./sth.'	Demonstranten ('protester'), Trommeln ('drums')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
72	sich verstehen (4)	481	'to know all about sth.'/'to have command of sth.'	Juwelen und Literatur ('jewels and literature'), Industriespionage ('industrial espionage')
73	spekulieren (3)	450	'to speculate for sth.'/'to bargain for sth.'	den Posten ('appointment'), Gewinne ('earnings')
74	lauern (2)	401	'to lurk'/'to watch'/'to waylay'	den Briefträger ('the mail man'), den Gedanken ('the thought')
75	einrichten (5)	390	'to get ready for sth.'/'to make arrangements for sth.'	die Gäste ('the guests'), den Theaterbesuch (the theatre visit')
76	zurückwirken	352	'to retroact'	die Gesellschaft ('the society'), die Kunst ('the art')
77	verteilen	338	'to distribute'/'to spread sth.'	drei Zimmer ('three rooms), zwei oder drei Abende ('two or three evenings')
78	erkennen (6)	328	'to deliver a judgement' (law)	Notwehr ('self-defense'), eine Freiheitsstrafe von sieben Jahren ('prison sentence of seven years')
79	brennen (8)	325	's.o. is itching to deal with sth.'/'to wait impatiently for sth.'	Revanche ('revenge'), ihr heutiges Heimspiel ('their home game of today')
80	rekurrieren	297	'to refer to sth.'/'to hint at sth.'	höhere Werte ('higher values'), die Vernunft ('rationality, reason')
81	verfallen (7)	296	'to jump on an idea'/'to entertain a thought'	einen Ausweg ('a way out'), einen Gedanken ('a thought')
82	trimmen (5)	288	'to exercise with the goal of sth.'/'to style'	Befehl und Gehorsam ('order and obedience'), Spaß ('fun')
83	schlagen (21)	253	'to affect negatively'	aufs Gemüt ('(to weigh heavily) on someone's mind'), den Magen ('the stomach')
			'to add on sth.'	den Preis ('the price'),
84	(anstoßen (6))	206	'to toast to sth.'	ein glückliches Wiedersehen ('a happy reunion'), die Gesundheit ('the health')
85	umstellen (3)	196	'to change sth. to sth.'	Biodiesel ('eco diesel'), Fisch ('fish')
			'to adapt' (refl.)	solche klimatischen Verhältnisse ('such klima conditions')
86	sinnen (2)	195	'to muse'/'to plan for sth.'	einen Ausweg ('a way out'), Verrat ('treason')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
87	halten (26)	186	'to pay attention to sth.'	Ordnung und Disziplin ('order and discipline'), Lebensqualität ('quality of life')
88	trinken (3)	172	'to drink on s.o./sth.'	seinen Erfolg ('his success'), das Geburtstagskind ('birthday child')
89	abfärben (2)	167	'to rub off on s.o.'	mich ('me'), seine Umgebung ('his surroundings')
90	einreden (3)	155	'to talk at so.o.'	die Schiedsrichter ('the referees'), ihre Tochter ('her daughter')
91	einpendeln	148	'to even out'	Vorjahresniveau (‚level of the previous year'), das Mittelmaß ('mean')
92	schalten (7)	144	'to switch to'	Autopilot ('auto pilot'), höhere Beleutungsstärken ('higher illumination level')
			'to change attitude towards sth.'	Konfrontationskurs ('confrontation'), Wahlkampf ('election campaign')
			'to position on sth.'	Stand-by ('stand-by'), Zeitlupe ('slow motion')
93	trainieren (6)	143	'to train s.o. for sth.'	das Überleben in der Wüste ('the survival in the desert'), das Aufspüren von Rauschgift ('the tracking of drugs')
94	wetten	140	'to bet on sth.'	sein eigenes Pferd ('his own horse'), eine konjunkturelle Erholung ('a economic recovery')
95	abfahren (4)	139	'to like s.o./sth. very much'	Autos ('cars'), sportliche blonde Männer ('athletic blonde men')
96	ausüben	138	'to influence s.o./sth.'	die Regierung ('the government/administration'), die Hersteller ('the manufacturer')
97	enden (9)	136	'to end on sth.'	den Vokal ('the vowel'), 95 cent ('95 cent')
98	erwidern (2)		'to respond to s.o./sth.'	den Einwand ('the objection'), telefonische Anfrage ('inquiry over the phone')
99	hinzielen	124	'to be aimed at sth.'	eine bestimmte Sache ('a particular thing'), Bildung eines eigenen Staates ('formation of a separate state')
100	sich versteifen (4)	121	'to insist on one's opinion'	die altbekannte These ('the long-known thesis'), ihre Forderungen ('her claims')
101	einstechen (2)	119	'to stab s.o.'	seinen Zahnarzt ('his dentist'), ihren Oberkörper ('her upper part of the body')
102	sehen (17)	117	'to watch sth.'/'to pay attention to sth.'	seinen Vorteil ('his advantage')

Table 4.3 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
103	hören (9)	109	‘to intensely listen to sth.’ ‘to obey sth.’	den Donner (‘the thunder’), eine leise Stimme (‘a low voice‘) seine Mutter (‘his mother’), diesen Befehl (‘this order‘)

Appendix C

Table 5.1: Verbs-PP [P_{auf}+ NP_{ACC}] Combinations with Future Meaning

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
1	warten (5)	15,094	's.o./sth. is waiting for sth.'	dich ('you'), Hilfe ('help')
			'sth. is waiting for something to happen'/'sth. needs to be done to sth.'	eine Wäsche ('a washing'), Erledigung ('handling')
			'sth. is waiting for s.o.'	die Besucher ('the visitors'), die Ermittler ('the detectives')
2	vorbereiten (4)	12,202	'to prepare s.o. for sth.'	auf die Prüfung ('the exam'), den neuen Bus ('the new bus')
			'to get ready for sth.'	weitere Preissteigerungen ('further increases of the price'), eine Kürzung der Mittel ('financial cuts')
3	sich auswirken (4)	10,475	'to affect s.o./sth.'	das körperliche Wohlbefinden ('the physical well-being'), den Arbeitsmarkt ('the job market')
4	übertragen (8)	9,490	'to transfer sth. to sth.'	andere Kunstgebiete ('other areas of creative or artistic work'), die dortigen Verhältnisse ('the conditions there')
			'to carry sth. over'	die Mannschaft ('the team'), das Publikum ('the audience')

Table 5.1 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
5	hoffen (2)	7,827	'to hope for sth.'	eine bessere Zukunft ('a better future'), einen energischen Schiedsrichter ('a resolute referee')
6	zielen (3)	6,188	'to aim for sth./s.o.'	eine Stärkung des Selbstwertgefühls ('a strengthening of the self esteem'), junge Käufer ('young consumers')
7	einstellen (7)	3,846	'to adjust sth./to sth.'	das Morphin ('the morphine'), die Erfordernisse der Tour de France ('the requirements of the Tour de France')
8	sich freuen (3)	3,376	'to look forward to'	meinen nächsten Urlaub ('my next vacation'), den Euro ('the euro')
9	abzielen (2)	2,839	'to intend sth.'	die Gleichberechtigung ('equal rights'), eine prinzipielle Revision der Psychoanalyse ('a revision of the psycho analysis in principal')
10	sich richten (5)	2,391	'to aim at sth./s.o.'	sein Interesse auf die neue Arbeit richten ('to aim one's interest at the new job'), große Erwartungen richten sich auf ihn ('high expectations are aimed at him')
11	hinauslaufen (3)	2,344	'to amount to sth.'	die Umstrukturierung des Betriebs ('the restructuring of the company'), persönliche Motive ('personal motives')

Table 5.1 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
12	umstellen (3)	1,840	'to adapt to sth.'/'to change sth. to sth.'	Gas ('natural gas'), ökologischen Anbau ('ecological farming')
13	anlegen (8)	1,523	'to at s.o./sth.'/'to angle for sth./s.o.'	ihn ('him'), eine direkte Konfrontation ('a direct confrontation')
14	dringen/drängen (3)	1,491	'to insist on sth.'	Einhaltung der Regeln ('compliance to the rules'), eine schnelle Entscheidung ('a quick decision')
15	hinwirken	1,193	'to aspire sth.'/ 'to work towards sth.'	die Verbesserung der Wohnverhältnisse ('the improvement of the living conditions'), die Integration von Behinderten und Ausländern ('the integration of disabled persons and foreigners')
16	hinarbeiten	925	'to work toward sth.'	die gleichen Ziele ('the same goals'), die Wiedervereinigung Deutschlands ('the reunification of Germany')
17	pochen (6)	831	'to insist on sth.'	sein Recht ('his rights'), Zahlung ('payment')
18	zählen (11)	829	'to count on sth./s.o.'	die Solidarität und Unterstützung ('solidarity and support'), Projekte im Bereich erneuerbarer Energien ('projects regarding renewable energies')

Table 5.1 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
19	rechnen (10)	733	'to rely on s.o./sth.'	die Unterstützung der Nachbarstaaten ('the support of the bordering countries'), dich ('you')
20	einstimmen (3)	704	'to prepare s.o./ oneself for sth.'/'to get in the mood for sth.'	Weihnachten ('Christmas'), den Wahlkampf ('election campaign')
21	spekulieren (3)	450	'to speculate for sth.'/'to bargain for sth.'	den Posten ('appointment'), Gewinne ('earnings')
22	lauern (2)	401	'to lurk'/'to watch'/'to waylay'	den Briefträger ('the mail man'), den Gedanken ('the thought')
23	einrichten (5)	390	'to get ready for sth.'/'to make arrangements for sth.'	die Gäste ('the guests'), den Theaterbesuch (the theatre visit')
24	brennen (8)	325	's.o. is itching to deal with sth.'/'to wait impatiently for sth.'	Revanche ('revenge'), ihr heutiges Heimspiel ('their home game of today')
25	sinnen (2)	195	'to muse'/'to plan for sth.'	einen Ausweg ('a way out'), Verrat ('treason')
26	wetten	140	'to bet on sth.'	sein eigenes Pferd ('his own horse'), eine konjunkturelle Erholung ('a economic recovery')

Table 5.1 continued

#	Verb (# of senses)	Frequency	Senses with *auf*	Example NPs in accusative case
27	hinzielen	124	'to be aimed at sth.'	eine bestimmte Sache ('a particular thing'), Bildung eines Staates ('formation of a state')

Appendix D

Table 5.2: Base Verbs of the Verb-PP$_{auf}$ Combinations

#	Verb (# of senses)	Senses with PP$_{auf}$	Base verbs without PP	Meaning of base verb
1	warten (5)	's.o./sth. is waiting for sth.'	warten	'to wait'
		'sth. needs to be done to sth.'	warten	'to wait'
		'sth. is waiting for s.o.'	warten	'to wait'
2	vorberei-ten (4)	'to prepare s.o. for sth.'	vorbereiten	'to prepare'
		'to get ready for sth.'	vorbereiten	'to prepare'
3	sich auswirken (4)	'to affect s.o./sth.'	(sich) auswirken	1. 'to affect', 'to have an effect', 2. 'to obtain sth.'
4	übertragen (8)	'to transfer sth. to sth.'	übertragen	'to transfer, transmit'
		'to carry sth. over'	übertragen	'to transfer, transmit'
5	hoffen (2)	'to hope for sth.'	hoffen	'to hope'
6	zielen (3)	'to aim for sth./s.o.'	zielen	'to take aim' (physically)
7	einstellen (7)	'to adjust sth./to sth.'	einstellen	1. 'to adjust sth.', 2. 'to appoint s.o.', 3. 'to stop sth.', 4. 'to tie a record', 5. 'to place sth. somewhere'
8	sich freuen (3)	'to look forward to'	'sich freuen'	'to be happy'
9	abzielen (2)	'to intend sth.'	---	---
10	sich richten (5)	'to aim at sth./s.o.'	sich richten	'to judge oneself', 'to commit suicide'
11	hinauslau-fen (3)	'to amount to sth.'	hinauslaufen	'to run outside'
12	umstellen (3)	'to adapt to sth.'/'to change sth. to sth.'	umstellen	1. 'to relocate, reposition', 2. 'to shift', 'to switch', 'to redirect', 3. 'to adapt'
13	anlegen (8)	'to at s.o./sth.'/'to angle for sth./s.o.'	anlegen	1. 'to add', 2. 'to land', 3. 'to put on', 4. 'to create sth.', 5. 'to invest (money)'
14	dringen/ drängen (3)	'to insist on sth.'	dringen: --- drängen	1. 'to push, rush, urge s.o.', 'to goad', 2. 'sth. is pressing', 3. 'to shove'

Table 5.2 continued

#	Verb (# of senses)	Senses with PPauf	Base verbs without PP	Meaning of base verb
15	hinwirken	‘to aspire sth.’/ ‘to work towards sth.’	---	---
16	hinarbeiten	‘to work toward sth.’	---	---
17	pochen (6)	‘to insist on sth.’	pochen	1. ‘to knock’, 2. ‘to beat time, 3. ‘to nail’, 4. ‘to break up (ore, coal’), 5. ‘to hit’
18	zählen (11)	‘to count on sth./s.o.’	zählen	1. ‘to determine the quantity of sth.’, 2. ‘to put one thing after the other somewhere and say each time the respective number’, 3 ‘to name the numbers in a order’, 4. ‘someone determines how many’, 5, ‘to have a certain number of sth.’, 6. ‘to be important’
19	rechnen (10)	‘to rely on s.o./sth.’	rechnen	1. ‘to calculate’, 2. ‘to determine’
20	(sich, jmd.) einstimmen (3)	‘to prepare s.o./ oneself for sth.’/‘to get in the mood for sth.’	einstimmen	1. ‘to tune’
21	spekulieren (3)	‘to speculate for sth.’/‘to bargain for sth.’	spekulieren	1. ‘to play the stock market’, ‘to gamble’, 2. ‘to conjecture’
22	lauern (2)	‘to lurk’/’to watch’/‘to waylay’	---	---
23	sich einrichten (5)	‘to get ready for sth.’/‘to make arrangements for sth.’	sich einrichten	1.‘to furnish’, 2. ‘to make possible’
24	brennen (8)	‘s.o. is itching to deal with sth.’/‘to wait impatiently for sth.’	brennen	1.-4. ‘to burn’, 5. ‘sth. is hurting’, 6. ‘to burn in ‘, 7. fig. ‘to burn’, 8. ‘to cause a burning pain’
25	sinnen (2)	‘to muse’/‘to plan for sth.’	sinnen	‘to muse’, ‘to reflect’

Table 5.2 continued

#	Verb (# of senses)	Senses with PPauf	Base verbs without PP	Meaning of base verb
26	wetten	‘to bet on sth.’	wetten	‘to bet’
27	hinzielen	‘to be aimed at sth.’	---	---

Appendix E

Table 5.3: Near-Synonyms of the Non-Future-Oriented Base Verbs

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
anlegen (‘to land’, ‘to aim’, ‘to dress’)	zielen (‘to aim’), abzielen (‘to aim’), aus sein auf (‘to be up to’), es abgesehen haben auf (‘to zero in on’), hinsteuern, hinzielen (‘to aim’), sinnen (‘to reflect’) (7)	aufsetzen (‘to bear’), einschweben (‘to hover’), herabfliegen (‘to fly down’), aneinandergeraten (‘to close with’), anbinden (‘to tether’), anbändeln (‘to flirt with’), anhalten (‘to stop’), dranlegen (‘to place at’), legen (‘to lay’), in Anschlag bringen (‘to move up against’), anschlagen (‘to hook on’), (an)visieren (‘to aim at’), halten (‘to hold’), anziehen (‘to dress’), bekleiden (‘to dress’), hineinschlüpfen (‘to slip in’), kleiden (‘to dress’), schlüpfen (‘to slip’), überstreifen (‘to slip over’), überwerfen (‘to throw over’), überziehen (‘to cover’), antun (‘to force’), aufbauen (‘to build’), bilden (‘to build’), einrichten (‘to furnish’), erzeugen (‘to create’), installieren (‘to install’), schaffen (‘to succeed’), erschaffen (‘to create’), erstellen (‘to compile’), festlegen (‘to determine’), investieren (‘to invest’), einlegen (‘to inlay’), platzieren (‘to place’), ausgeben (‘to spend’), bezahlen (‘to pay’), spendieren (‘to treat’), zahlen (‘to pay’), ausspucken (‘to disgorge’), hinblättern (‘to fork out’), hinlegen (‘to lie down’), sich verausgaben (‘to go for broke’), anvisieren (‘to aim for’), ausgehen (‘to go out’), intendieren (‘to intend’), trachten (‘to aspire’) (46)
sich auswirken (‘to affect s.o./sth.’)	(0)	sich ergeben (‘to yield’), sich geltend machen (‘to assert itself’), sich legen (‘to abate‘), mitspielen (‘to play along’), nützen (‘to be of use’), prägen (‘to coin’), schlagen (‘to strike’), wirksam sein (‘to be effective’), zehren (‘sth. gnaws at sth.’), zurückfallen (‘to fall back’), zurückschlagen (‘to it back’), zusetzen (‘to afflict’), ausmachen (‘to amount to sth.’), fruchten (‘to yield results’), beeinflussen (‘to influence’), funktionieren (‘to work’), fallen (‘to fall’), wirken (‘to effect’) (18)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
brennen (‘to burn’, ‘to undergo combustion’)	(0)	flackern (‘to flare’), glimmen (‘to glow’), glühen (‘to glow’), hochschlagen (‘to turn up’), lodern (‘to flare’), lohen (‘to blaze’), schwelen (‘to smolder’), flammen (‘to burn’), emporflammen (‘to burn up’), sengen (‘to parch’), stechen (‘to stab’), sich brühen (‘to scald’), verbrennen (‘to burn’), verbrühen (‘to scald’), abbrennen (‘to burn down’) (15)
drängen (‘to push’)	pochen (‘to knock’) (1)	sich durcharbeiten (‘to wade through’), gelangen (‘to attain’), hineindringen (‘to get in’), stoßen (‘to push’), sich vorarbeiten (‘to work through’), vordringen (‘to advance’), vorstoßen (‘to advance’), bedrängen (‘to beset’), behelligen (‘to molest’), eindringen (‘to break in’), bearbeiten (‘to edit’), beharren (‘to insist’), bestehen (‘to exist’), festhalten (‘to hold’), fordern (‘to ask’), verlangen (‘to ask’), sich versteifen (‘to harden’), insistieren (‘to insist’) (18)
einrichten (‘to furnish’, ‘to decorate’)	sich einstellen (‘to adapt oneself’), sich gefasst machen (‘to prepare oneself’), sich vorbereiten (‘to prepare oneself’) (3)	ausrüsten (‘to arm’), ausstaffieren (‘to garnish’), ausstatten (‘to equip’), möblieren (‘to furnish’), sich ausrichten (‘to align oneself’), einplanen (‘to allow for’), sich rüsten (‘to arm’), sich wappnen (‘to arm’), arrangieren (‘to arrange’), ermöglichen (‘to enable’), organisieren (‘to organize’), installieren (‘to install’), umarbeiten (‘to alter’), umbilden (‘to remodel’), sich anpassen (‘to acclamitize’), sich einfügen (‘to blend in’), sich ergeben (‘to arise’), sich akklimatisieren (‘to acclamitize’), sich assimilieren (‘to assimilate’), sich integrieren (‘to integrate’) (20)
sich einstimmen (‘to prepare s.o./ oneself for sth.’/‘to get in the mood for sth.’)	sich einstellen (‘to adapt oneself’), sich vorbereiten (‘to prepare oneself’) (2)	regeln (‘to manage’), regulieren (‘to regulate’), stimmen (‘to tune’), sich beteiligen (‘to take part’), einfallen (‘to join’), beipflichten (‘to assent’), beistimmen (‘to agree with s.o./sth.’), zustimmen (‘to approve sth.’) (8)

Table 5.3 continued

Base verbs without temporal/future meaning	Near-synonyms, compatible with *auf*-construction (future event)	Near synonyms, not compatible with *auf*-construction
einstellen (‘to adjust’, ‘to park’, ‘to place’)	sich einrichten (‘to furnish’), sich einstimmen (‘to join in’), sich gefasst machen (‘to prepare oneself’), sich vorbereiten (‘to prepare oneself’) (4)	ankommen (‘to arrive’), anlangen (‘to arrive’), antreten (‘to line up’), sich einfinden (‘to appear’), eintreffen (‘to arrive’), erscheinen (‘to appear’), kommen (‘to come’), anrücken (‘to march up’), anzwitschern (‘to arrive’), eintrudeln (‘to arrive’), antanzen (‘to waltz in’), aufkreuzen (‘to show up’), einfügen (‘to insert’), eingliedern (‘to incorporate’), einordnen (‘to file’), einrangieren (‘to file’), einräumen (‘to place in’), einreihen (‘to dispose’), einsortieren (‘to sort’), hineinlegen (‘to put inside’), hineinstellen (‘to put inside’), ablaufen (‘to drain’), sich abspielen (‘to happen’), aufkommen (‘to emerge’), auftauchen (‘to appear’), auftreten (‘to occur’), sich bestätigen (‘to confirm’), sich bewahrheiten (‘to prove true’), einsetzen (‘to insert’), eintreten (‘to enter’), entstehen (‘to arise’), sich ereignen (‘to happen’), erfolgen (‘to occur’), sich erfüllen (‘to come true’), geschehen (‘to happen’), kommen (‘to come’), passieren (‘to happen’), stattfinden (‘to happen’), sich vollziehen (‘to take place’), vonstattengehen (‘to take place’), vorkommen (‘to occur’), sich begeben (‘to happen’), sich zutragen (‘to befall’), abstellen (‘to stable’), hinstellen (‘to arrange’), parken (‘to park’), stellen (‘to put’), unterbringen (‘to place’), unterstellen (‘to assume’), einplanen (‘to allow for’), sich rüsten (‘to arm’), sich wappnen (‘to arm’), sich präparieren (‘to prepare’), sich anfreunden (‘to make friends’), sich angleichen (‘to adapt’), sich anpassen (‘to acclimatize’), sich einfügen (‘to blend in’), sich eingewöhnen (‘to acclimatize’), sich eingliedern (‘to integrate’), sich einleben (‘to settle in’), sich einpassen (‘to adapt’), sich ergeben (‘to arise’), sich fügen (‘to comply’), sich gewöhnen (‘to acclimatize’), sich richten (‘to direct’), sich unterordnen (‘to subordinate’), sich unterwerfen (‘to comply’); sich akklimatisieren (‘to acclimatize’), sich assimilieren (‘to assimilate’), sich integrieren (‘to integrate’), sich anbequemen (‘to get used to’), abstimmen (‘to vote’), angleichen (‘to align’), anpassen (‘to conform’), ausrichten (‘to align’), passend machen (‘to make fit’), regeln (‘to rule’), regulieren (‘to administer’), stimmen (‘to attune’), justieren (‘to gauge’), eichen (‘to gauge’), kalibrieren (‘to calibrate’), fluchten (‘to align’), konfigurieren (‘to configure’) (85)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
sich freuen (‘to be happy’, ‘to enjoy’)	(0)	amüsieren (‘to amuse’), Freude, Spaß haben (‘to have fun’), vergnügen (‘to delight’), verlustieren (‘to amuse oneself’), erfreut sein (‘to be encouraged’), Freude empfinden (‘to feel happy’), frohlocken (‘to rejoice’), strahlen (‘to glare’), entzücken (‘to charm’), erfreuen (‘to delight’), Freude bereiten/machen (‘to delight’), beglücken (‘to make happy’), erbauen (‘to build’), sich erfreuen (‘to make glad’), fröhlich/glücklich sein (‘to be happy’), Gefallen finden/haben (‘to enjoy’), genießen (‘to enjoy’), jauchzen (‘to cheer’), jubeln (‘to cheer’), triumphieren (‘to triumph’), voller Freude sein (‘to be thrilled’), sich entzücken (‘to delight’), sich erbauen (‘to edify oneself’), erbaut sein (‘to be edified’), sich ergötzen (‘to disport oneself’), jubilieren (‘to jubilate’), sich weiden (‘to revel in’) (32)
hinauslaufen (‘to run outside’)	(0)	herauslaufen (‘to flow out’), herausrennen (‘to run out of’), hinausrennen (‘to run out of’), ins Freie laufen/rennen (‘to run outside’), nach draußen laufen/rennen (‘to run outside’), herausschießen (‘to sputter’), hinausschießen (‘to overshoot’), hinausspringen (‘to jump out’), münden (‘to flow’), hinauskommen (‘to come out’) (12)
hoffen (‘to hope’)	rechnen (‘to count on’), harren (‘to await sth.’), spekulieren (‘to speculate’) (3)	sich ausmalen (‘to imagine’), sich ausrechnen (‘to reckon sth.’), entgegensehen (‘to be poised for sth.’), erhoffen (‘to hope for sth.’), erträumen (‘to imagine’), erwarten (‘to expect’), herbeisehnen (‘to yearn for’), herbeiwünschen (‘to long for’), sich sehnen (‘to long for sth.’), träumen (‘to dream’), sich versprechen (‘to promise’), [sich] wünschen (‘to wish for sth.’), ersehnen (‘to desire’), [sich] gewärtigen (‘to anticpate’), optimistisch sein (‘to be optiminstic’), zuversichtlich sein (‘to be confident’) (16)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
pochen (‘to knock’)	dringen (‘to insist’) (1)	hämmern (‘to hammer’), klopfen (‘to knock’), schlagen (‘to hit’), trommeln (‘to drum’), ballern (‘to bang’), pulsieren (‘to pulsate’), sich ausbitten (‘to ask for’), bleiben bei (‘to stick to’), festhalten an (‘to adhere to’), fordern (‘to demand’), verlangen (‘to request’), persistieren (‘to persist’), reklamieren (‘to object’), beharren (‘to insist’), bestehen (‘to exist’), insistieren (‘to insist’) (16)
rechnen (‘to calculate’)	hoffen (‘to hope’), zählen (‘to count’), spekulieren (‘to speculate’), sich gefasst machen auf (‘to prepare for’), gefasst sein auf (‘to be prepared for’) (5)	vermuten (‘to assume’), ausrechnen (‘to compute’), berechnen (‘to calculate’), einen Überschlag machen (‘to make an estimate’), lösen (‘to solve’), eine Rechnung ausführen (‘to do a calculation’), ermitteln (‘to determine’), errechnen (‘to compute’), überschlagen (‘to estimate’), zusammenrechnen (‘to add up’), zusammenzählen (‘to add up’), kalkulieren (‘to allow for’), sich bezahlt machen (‘to pay off’), etwas einbringen/eintragen (‘to bring sth.’), Früchte tragen (‘to yield fruit’), Gewinn bringen (‘to bring a profit’), sich lohnen (‘to be profitable’), sich rentieren (‘to be profitable’), sich auszahlen (‘to pay off’), bauen (‘to build’), sich verlassen (‘to bank on’), vertrauen (‘to trust’), glauben an (‘to believe in’), kommen sehen (‘to anticipate’) (26)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
sich richten (‘to commit suicide’)	sich einstellen (‘to prepare for’), orientieren (‘to position’), fixieren (‘to fasten’) (3)	hinrichten (‘to execute’), exekutieren (‘to execute’), abmurksen (‘to finish so. off’), abschlachten (‘to butcher’), ausschalten (‘to turn off’), beiseite schaffen (‘to stash away’), beseitigen (‘to remove’), eliminieren (‘to eliminate’), entleiben (‘to disembody’), ermorden (‘to kill’), exekutieren (‘to execute’), kaltmachen (‘to still so’)., killen (‘to kill’), liquidieren (‘to liquidate’), massakrieren (‘to massacre’), meucheln (‘to assassinate’), neutralisieren (‘to neutralize’), niedermetzeln (‘to massacre’), terminieren (‘to terminate’), töten (‘to kill’), totmachen (‘to kill’), lenken (‘to steer’), sich anpassen (‘to acclimatize’), beachten (‘to consider’), befolgen (‘to adhere’), folgen (‘to obey’), gehorchen (‘to obey’), sich halten (‘to abide by’), nachkommen (‘to comply with’), abhängen (‘to depend on’), abhängig sein (‘to be addicted to’), bedingt sein (‘to depend on’), beruhen (‘to rely on’), bestimmt sein (‘to be intended for’), gebunden sein (‘to be bound to’), urteilen (nach) (‘to judge from’) (36)
sinnen (‘to muse’)	reflektieren (‘to reflect’), abzielen (‘to be aimed at’), anlegen (‘to apply’), gerichtet sein (‘to be aimed at’), hinsteuern (‘to move towards’), hinzielen (‘to drive at’), zielen (‘to aim’) (7)	sich bedenken (‘to bethink of oneself’), sich besinnen (‘to bethink’), denken (‘to think’), durchdenken (‘to think sth. through’), grübeln (‘to brood over sth.’), nachdenken (‘to reflect’), nachgrübeln (‘to mull’), sinnieren (‘to muse’), überdenken (‘to reassess’), überlegen (‘to consider’), nachsinnen (‘to cogitate’), brüten über (‘to pore over sth.’), ansteuern (‘to head for’), anvisieren (‘to sight for’), anzielen (‘to sight’), beabsichtigen (‘to intend’), bezwecken (‘to aim to achieve’), streben (‘to aspire’), vorhaben (‘to be up to’), anstreben (‘to pursue’), erstreben (‘to seek’), trachten (‘to strive after sth.’), intendieren (‘to intend’) (23)
spekulieren (‘to speculate for sth.’/‘to bargain for sth.’’)	hoffen (‘to hope for sth.’), setzen (‘to put’), rechnen (‘to anticipate’), zählen (‘to count on s.o./sth.’) (4)	bauen auf (‘to bank on s.o./sth.’), erhoffen (‘to hope for sth.’), erwarten (‘to expect sth.’), sich verlassen (‘to rely on s.o./sth.’), vertrauen (‘to trust’), annehmen (‘to suppose’), glauben (‘to believe’), meinen (‘to mean’), mutmaßen (‘to conjecture’), [nach]denken (‘to think’), rechnen mit (‘to anticipate sth.’), sinnieren (‘to muse’), vermuten (‘to suppose’), argwöhnen (‘to suspect’), kalkulieren (‘to allow for sth.’), schätzen (‘to estimate’), tippen (‘to tip s.o./sth.’) (17)

Table 5.3 continued

Base verbs without temporal/future meaning	Near-synonyms, compatible with *auf*-construction (future event)	Near synonyms, not compatible with *auf*-construction
übertragen	überschreiben (‘to overwrite’), vererben (‘to bequeath’), einrichten (‘to furnish’) (3)	abtreten (‘to cede’), überantworten (‘to give sth. over to’), überlassen (‘to allocate’), verleihen (‘to lend’), vermachen (‘to bequeath’), arrangieren (‘to arrange’), umformen (‘to convert’), umgestalten (‘to recast’), umsetzen (‘to implement’), umwandeln (‘to convert’), adaptieren (‘to adapt’), transformieren (‘to transform’), anwenden (‘to apply’), schließen (‘to conclude’), vergleichen (‘to compare’), zuschreiben (‘to ascribe’), extrapolieren (‘to extrapolate’), projizieren (‘to project’), transportieren (‘to transport’), vermitteln (‘to convey’), weitergeben (‘to hand down’), [weiter]leiten (‘to forward’); kommunizieren (‘to communicate’); rüberbringen (‘to get sth. across’), abtreten (‘to cede’), hergeben (‘to give sth. away’), herschenken (‘to give sth. away’), übereignen (‘to assign transfer’), überlassen (‘to cede’), [ver]schenken (‘to give away’), überliefern (‘to pass down’), zedieren (‘to cede’), einbringen (‘to yield’), einsetzen (‘to insert’), einpflanzen (‘to graft’), implantieren (‘to implant’), transplantieren (‘to transplant’), einzahlen (‘to deposit’), transferieren (‘to transfer’), überweisen (‘to transfer’), verschieben (‘to delay’); anstecken (‘to infect’), verseuchen (‘to pollute’), weitergeben (‘to transmit’), infizieren (‘to infect’) (44)
umstellen (‘to swich’, ‘to change position’)	einstellen (‘to adjust’) (1)	rücken (‘to push along’), schieben (‘to push’), umsetzen (‘to change over’), verrücken (‘to disarrange’), verschieben (‘to shift’), versetzen (‘to dislocate’), verstellen (‘to alter’), umschalten (‘to change over’), umlegen (‘to reverse’), umbauen (‘to alter’); umkrempeln (‘to turn sth. inside out’) (11)

Table 5.3 continued

Base verbs without temporal/future meaning	Near-synonyms, compatible with *auf*-construction (future event)	Near synonyms, not compatible with *auf*-construction
vorbereiten (‘to prepare for sth.’, ‘to get ready for sth.’)	sich einstimmen (‘to attune’), sich einstellen (‘to adapt oneself’) (2)	abrichten (‘to drill’), anleiten (‘to guide’), anlernen (‘to educate’), ausbilden (‘to train’), befähigen (‘to empower’), dressieren (‘to break in’), einführen (‘to introduce’), einstudieren (‘to rehearse sth.’), eintrainieren (‘to rehearse sth.’), einweisen (‘to admit s.o. to sth.’), fortbilden (‘to upgrade s.o.’), informieren (‘to inform’), instruieren (‘to instruct’), qualifizieren (‘to qualifiy’), schulen (‘to train’), trainieren (‘to train’), unterrichten (‘to teach’), unterweisen (‘to instruct’), präparieren (‘to prepare’), bimsen (‘to sap’), trimmen (‘to drill’), sich aneignen (‘to acquire sth.’), sich antrainieren (‘to practice’), sich einarbeiten (‘to familiarize’), einstudieren (‘to rehearse’), lernen (‘to learn’), proben (‘to practice’), studieren (‘to study’), trainieren (‘to train’), [sich] üben (‘to practice’), sich bereiten (‘to prepare’), sich rüsten (‘to prepare’), sich wappnen (‘to arm’), sich daranmachen (‘to start doing sth.’), sich daransetzen (‘to start doing sth.’), pauken (‘to cram’), arbeiten (‘to work’), probieren (‘to test’), sich abzeichnen (‘to become apparent’), sich anbahnen (‘to be looming’), sich andeuten (‘to foreshadow’), sich ankündigen (‘to announce’), aufkeimen (‘to sprout’), aufkommen (‘to emerge’), aufziehen (‘to pull up’), sich [aus]bilden (‘to educate oneself’), entstehen (‘to come into existence’), sich entwickeln (‘to develop’), sich erheben (‘to rise’), erwachsen (‘to accrue’), sich formen (‘to form’), sich heranbilden (‘to educate’), sich regen (‘to stir’), sich zusammenbrauen (‘to concoct’), aufglimmen (‘to gleam’), aufsteigen (‘to rise’), erwachen (‘to wake up’), anrichten (‘to arrange’), [auf]bereiten (‘to preprocess’), bereit machen (‘to prepare’), bereitstellen (‘to provide’), einstellen (‘to adjust’), fertig machen (‘to finish’), herrichten (‘to refurbish’), machen (‘to make’), zubereiten (‘to prepare’), zurechtmachen (‘to adjust sth.’), richten (‘to adjust’), rüsten (‘to arm’), zurichten (‘to finish’), anbahnen (‘to be looming’), anknüpfen (‘to begin’), sich anspinnen (‘to develop’), arrangieren (‘to arrange’), einleiten (‘to initiate’), organisieren (‘to organize’), planen (‘to plan’), initiieren (‘to initiate’), aushecken (‘to compass sth.’), austüfteln (‘to puzzle out’), einfädeln (‘to contrive’), anzetteln (‘to incite’) (82)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
warten (‘to wait’)	harren (‘to await sth.’), lauern (‘to lurk’) (2)	abpassen (‘to watch for s.o./sth.’), abwarten (‘to await sth.’), ausdauern (‘to perservere’), ausschauen (‘to be on the lookout’), erwarten (‘to await’), sich gedulden (‘to be patient’), sich in Geduld fassen/üben (‘to be patient’), zuwarten (‘to wait patiently’), verharren (‘to remain’), abwarten und Tee trinken (‘to wait and drink tea’), passen (‘to wait’), bleiben (‘to stay’), sich nicht von der Stelle rühren (‘not to stir from the spot’), ausharren (‘to hold out’), verbleiben (‘to remain’), verharren (‘to pause’), verweilen (‘to dwell on sth.’), aufschieben (‘to adjourn’), hinausschieben (‘to defer sth.’), hinauszögern (‘to postpone sth.’), verzögern (‘to delay sth.’), vor sich herschieben (‘to keep postponing’), zaudern (‘to dither’), zögern (‘to hesitate’), zurückstellen (‘to defer sth.’), auf die lange Bank schieben (‘to shelve sth.’), in Ordnung/instand halten (‘to keep up’), pflegen (‘to maintain’), versorgen (‘to take care of sth.’) (30)
wetten (‘to bet on sth.’)	(0)	setzen (‘to put’), tippen (‘to tip s.o./sth.’), aufs Spiel setzen (‘to adventure’), einsetzen (‘to insert sth.’), riskieren (‘to risk sth.’), verwetten (‘to gamble’), jede Wette eingehen (‘to bet any money’), seine Hand ins Feuer legen (‘to go out on a limb’), sich seiner Sache sicher/gewiss sein (‘to be sure’), überzeugt sein (‘to be convinced’), sich verbürgen (‘to vouch for s.o./sth.’), zocken (‘to gamble’), spielen (‘to play’) (15)
zählen (‘to count’)	rechnen (‘to calculate’), hoffen (‘to hope’) (2)	abzählen (‘to count’), durchzählen (‘to enumerate’), zusammenzählen (‘to add’), ausmachen (‘sth. accounts for’), sich belaufen (‘to add up), betragen (‘to account for’), sich beziffern (‘to number’), gehören (‘to belong’), gelten (‘to apply’), werten (‘to assess’), ankommen (‘to depend on’), stützen (‘to support’), bauen (‘to build’), vertrauen (‘to trust’) (14)

Table 5.3 continued

Base verbs without temporal/future meaning	**Near-synonyms, compatible with *auf*-construction (future event)**	**Near synonyms, not compatible with *auf*-construction**
zielen (‘to aim’)	anlegen (‘to apply’), abzielen (‘to be aimed at’), abzwecken (‘to be aimed at’), hinzielen (‘to drive at’) (4)	anpeilen (‘to locate), anvisieren (‘to aim for’), aufs Korn nehmen (‘to attack’), die Waffe richten auf (‘to train a weapon on’), halten auf (‘to aim at’), visieren (‘to sight’), anspielen auf (‘to allude to), sich beziehen auf (‘to refer to’), gelten (‘to apply’), gemünzt sein gegen (‘to be aimed at’), sich richten gegen (‘to be aimed at’), anstreben (‘to aspire’), beabsichtigen (‘to intend’), bezwecken (‘to purpose’), den Zweck haben/verfolgen (‘to serve a purpose’), zum Ziel haben (‘to serve a goal’), zu erreichen suchen (‘to seek to achieve’); intendieren (‘to intend’), hinauswollen (‘to get at’), ausrichten (‘to align’) (21)

Appendix F

Frame defintions from FrameNet, in alphabetical order

ANNOYANCE

DEFINITION:

An Experiencer, Expressor, or State has a feeling of annoyance as evoked by a Stimulus or concerning a Topic.

Peck was ANNOYED at the interruption.

Maggie noted his rather IRRITATED expression.

FEs:

Core:

Experiencer [Exp] **Semantic Type:** Sentient	The Experiencer is the person or sentient entity that experiences or feels the emotions.
Expressor [Exr]	The body part, gesture, or other expression of the Experiencer that reflects his or her emotional state. They describe a presentation of the experience or emotion denoted by the adjective or noun.
State [State]	The State is the abstract noun that describes a more lasting experience by the Experiencer.
Stimulus [Stim]	The Stimulus is the person, event, or state of affairs that evokes the emotional response in the Experiencer.
Topic [Top]	The Topic is the general area in which the emotion occurs. It indicates a range of possible Stimulus.

Non-Core:

Circumstances [cir]	The Circumstances is the condition(s) under which the Stimulus evokes its response. In some cases it may appear without an explicit Stimulus. Quite often in such cases, the Stimulus can be inferred from the Circumstances
Degree [Degr] **Semantic Type:** Degree	The extent to which the Experiencer's emotion deviates from the norm for the emotion.
Empathy_target [ET]	The Empathy_target is the individual or individuals with which the Experiencer identifies emotionally and thus shares their emotional response.
Manner [Man] **Semantic Type:** Manner	Any description of the way in which the Experiencer experiences the Stimulus which is not covered by more specific FEs, including secondary effects (quietly, loudly), and general descriptions comparing events (the same way). Manner may also describe a state of the Experiencer that affects the details of the emotional experience.
Parameter [Par]	The Parameter is a domain in which the Experiencer experiences the Stimulus.
Reason [Reas] **Semantic Type:** State_of_affairs	The Reason is the explanation for why the Stimulus evokes a certain emotional response.
Time [Tim]	The Time when the Experiencer, Expressor, or State can be described as having said emotion.

FE CORE SET(S):

{Experiencer, Expressor, State}, {Stimulus, Topic}

FRAME-FRAME RELATIONS:

Inherits from: Emotions_by_stimulus
Is Inherited by:
Perspective on:
Is Perspectivized in:
Uses:
Is Used by:
Subframe of:
Has Subframe(s):

Precedes:
Is Preceded by:
Is Inchoative of:
Is Causative of:
See also:

LEXICAL UNITS:

annoyed.a, frustrated.a, irritated.a

For the remaining frames I only include the Frame definitions due to space restriction. The lists of the core and non-core FEs, the FE core set(s), the Frame-to-Frame relations and the Lexical Units are available in the internet. Please direct your internet browser to https://framenet.icsi.berkeley.edu/fndrupal/index.php?q=frameIndex to access the Frame Index on the FrameNet website.

CAUSE_CHANGE_OF_PHASE

DEFINITION:

A Cause or Agent causes an Undergoer to undergo a change of phase. The Result of the change may be given, along with the Initial_state and the Circumstances under which the change can occur. Note that this frame contrasts with Cause_change_of_consistency in that this frame describes causation of a change of an Undergoer between different phases (i.e. solid to liquid or frozen to "unfrozen").
Bob MELTED the butter.

Sally DEFROSTED the chicken to eat for dinner.

CAUSE_MOTION

DEFINITION:

An Agent causes a Theme to undergo translational motion. Although different members of the frame have different degrees of profiling of the trajectory, the motion may always be described with respect to a Source, Path and/or Goal. In contrast with Placing, the final state of motion is not universally profiled, although individual instances of an LU may emphasize the Goal. Some words in this frame do not emphasize the Manner/Means of causing the motion (transfer.v, move.v). For many of the others (cast.v, throw.v, chuck.v, etc.), the Agent has control of the Theme only at the Source of motion, and does not experience overall motion. For others (e.g. drag.v, push.v, shove.v, etc.) the Agent has control of the Theme throughout the motion; for these words, the Theme is resistant to motion due to some friction with the surface along which they move. (They thus differ from the words of the Bringing frame in that they are supported by this surface, rather than a Carrier.) This frame contrasts with the following frames which talk about an Agent changing a Theme's position with respect to a landmark (either Source or Goal):

In Placing, the figure (Theme) is profiled as the object, and ends up on the ground (Goal). The focus is on the final stage of motion, in which the Theme ends up at the Goal, and usually stably remains there.

Joyce PLACED the flowers onto the bed.In Filling, the ground (Goal) is profiled as the object, and the figure (Theme) ends up on the ground (Goal).

John FILLED the box with old toys.In Removing, the figure (Theme) is profiled, and is removed from the ground (Source).

Jennifer REMOVED the flowers from the bed.In Emptying, the ground (Source) is profiled and the figure (Theme) is removed from it.

Jason EMPTIED the box of the old toys .

COMING_TO_BELIEVE

DEFINITION:

A person (the Cognizer) comes to believe something (the Content), sometimes after a process of reasoning. This change in belief is usually initiated by a person or piece of Evidence. Occasionally words in this domain are accompanied by phrases expressing Topic, i.e. that which the mental Content is about.

Based on the most recent census I have CONCLUDED that most Americans sleep too much.

DESIRING

DEFINITION:

An Experiencer desires that an Event occur. (Note that commonly a resultant state of the Event will stand in for the Event.) In some cases, the Experiencer is an active participant in the Event, and in such cases theEvent itself is often not mentioned, but rather some Focal_participant which is subordinately involved in the Event.

Generally, the use of a word in this frame implies that the specific Event has not yet happened, but that the Experiencer believes that they would be happier if it did. Sometimes the Time_of_Event, Purpose_of_Event, or the Location_of_Event are mentioned without the explicit mention of the Event.

I only WANTED one piece of candy.

The company *was* EAGER for him to leave as soon as possible.

Susan really WISHES that you 'd listen to her.

EMOTIONS

DEFINITION:

An Experiencer has a particular emotional State, which may be described in terms of a specific Stimulus that provokes it, or a Topic which categorizes the kind of Stimulus. Rather than expressing the Experiencer directly, it may (metonymically) have in its place a particular Event (with participants who are Experiencers of the emotion) or an Expressor (a body-part of gesture which would give an indication of the Experiencer's state to an external observer).

Semantic Type: Non-Lexical Frame, Non-perspectivalized_frame

EMOTIONS_BY_POSSIBILITY

DEFINITION:

An Experiencer, Expressor, Event, or State can be described as characterized by a particular emotion as evoked by a possibility in their future (Stimulus) or concerning a given Topic.

Semantic Type: Non-Lexical Frame

EMOTIONS_BY_STIMULUS

DEFINITION:

An Experiencer, Expressor, Event, or State has an emotion as brought on by an Stimulus or Topic.

The JOYFUL reunion took place on Sunday.

The Polish-born Pope was driven past JUBILANT crowds.

I am GLAD about the sheep .

EMOTION_HEAT

DEFINITION:

This frame contains verbs that describe emotional experiences and participate in the locative alternation, as in the following examples:

I was BOILING with anger.

Anger was BOILING inside me.While these words might seem to be like support verbs for emotion nouns such as anger, the same verbs can be used in the absence of such nouns, as in:

His remarks *made* me BOIL inside.

EMOTIONS_OF_MENTAL_ACTIVITY

DEFINITION:

An Experiencer can be described as having an emotion as induced by a Stimulus.
The children ENJOYED noise games and sing-songs.

The PLEASURES of eating are fleeting.

Diners DELIGHT in counter culture cuisine.

EVENT

DEFINITION:

An Event takes place at a Place and Time.
Big earthquakes only HAPPEN along plate boundaries. INI

EXPECTATION

DEFINITION:

Words in this frame have to do with a Cognizer believing that some Phenomenon will take place in the future. Some words in the frame (e.g. foresee.v) indicate that the Phenomenon is asserted also to be true, while others do not.

Michael EXPECTED Abby to demand examples.

From the look on her face Michael EXPECTED that she would say she got the job.

FEAR

DEFINITION:

An Experiencer, Expressor, or State can be described as characterized as having an emotion of fear concerning a particular Topic or as evoked by a Stimulus.

I was SCARED by a bump in the night.

IMPORTANCE

DEFINITION:

A Factor affects the outcome of an Undertaking, which can be a goal-oriented activity or the maintenance of a desirable state, the work in a Field, or something portrayed as affecting an Interested_party. A Reason may be given for the importance of the Factor. The Degree of importance may also be specified.

Temperature is the most CRITICAL factor in successful storage.

Timing will be CRITICAL.

Heathcliff *is* more IMPORTANT to me than myself .

1992 *was of* great IMPORTANCE to the business community.

INTENTIONALLY_ACT

DEFINITION:

This is an abstract frame for acts performed by sentient beings. It exists mostly for FE inheritance.

I CARRIED OUT the deed.

MENTAL_ACTIVITY

DEFINITION:

In this frame, a Sentient_entity has some activity of the mind operating on a particular Content or about a particular Topic. The particular activity may be perceptual, emotional, or more generally cognitive. This non-lexical frame is intended primarily for inheritance.

Semantic Type: Non-Lexical Frame

TRANSITIVE_ACTION

DEFINITION:

This frame characterizes, at a very abstract level, an Agent or Cause affecting a Patient. This frame is inherited by many lower-level frames.

Semantic Type: Non-Lexical Frame

WAITING

DEFINITION:

A Protagonist delays a planned action because they cannot or do not want to proceed until an Expected_event occurs. The Expected_event may be evoked by reference to a Salient_entity that participates in it. If a Salient_entity is expressed, the Expected_event is typically the arrival of the Salient_entity at the Place where the Protagonist is located.

The cat WAITED on top of the washer as Elmer popped the lid off the can of cat food and then pounded the can's contents onto the plate

The family was furious that their 84-year-old dad had to WAIT 52 hours in the emergency room.Although in both frames a Protagonist/Agent is not performing some desired action for some period of time, the use of wait.v in this frame is different from that in Holding_off_on in that Waiting prominently portrays a future event that will allow the Protagonist to proceed (with doing something), whereas Holding_off_on does not necessarily imply that there is some event or state-of-affairs that will allow the Agent to proceed, rather focussing on the action that the Agent is not yet taking.

References

Abd Er-Rahman, Faisa. 1984. Zur Unterscheidung von Präpositionalobjekt und adverbialer Präpositionalgruppe aus Sicht einer semantisch fundierten Valenztheorie. *Wissenschaftliche Zeitschrift der Humboldt-Universität, Gesellschaftswissenschaftliche Reihe* 33.537-540.

Abraham, Werner. 1972. Tiefenstrukturkasus und ihre Oberflächenrealisation bei zweiwertigen Sätzen des Deutschen. Eine Skizze. *Leuvense Bijdragen* 61.1-12.

Abraham, Werner. 1988. *Terminologie zur neueren Linguistik*. Tübingen: Niemeyer.

Abraham, Werner. 2006. Bare and Prepositional Differential Case Marking: The Exotic Case of German (and Icelandic) among All of Germanic. *Case, Valency and Transitivity*, ed. by Kulikov, Leonid I.; Andrej L′vovič Mal′čukov; and Peter De Swart, 115-145. Amsterdam/Philadelphia: Benjamins.

Adelung, Johann Christoph. 1793-1801. *Grammatisch-kritisches Wörterbuch der Hochdeutschen Mundart*. Leipzig: Breitkopf & Sohn.

Admoni, Wladimir G. 1982. *Der deutsche Sprachbau*. München: Beck.

Ágel, Vilmos. 2000. *Valenztheorie*. Tübingen: Narr.

Akmajan, Adrian; Richard A. Demers; Ann K. Farmer; and Robert M. Harnish. 1995. *Linguistics: An Introduction to Language and Communication*. Cambridge: MIT Press.

Andresen, Helga. 1973. Ein methodischer Vorschlag zur Unterscheidung von Ergänzungen und Angaben im Rahmen der Valenztheorie. *Deutsche Sprache* 1.49-63.

Asbury, Anna. 2005. Adposition as case realisations – Structures and consequences. *Leiden papers in Linguistics* 2/3.69-92.

Asbury, Anna. 2008. *The Morphosyntax of Case and Adpositions*. Utrecht: LOT.

Asbury, Anna; Berit Gehrke; and Veronika Hegedüs. 2007. One size fits all: Prefixes, particles, adpositions and cases as members of the category P. *Uil Ots Yearbook 2006,* ed. by Cem Keskin, 1–17. Utrecht Institute of Linguistics OTS, Utrecht University, n.d.. Archival material.

Askedal, John M. 2006. Regrammatikalisierung. Begriffliche Überlegungen und zwei deutsche Beispiele. *Wörter – Verbindungen. Festschrift für Jarmo Korhonen zum 60. Geburtstag*, ed. by Breuer, Ulrich; and Irma Hyvärinen, 301-316. Frankfurt am Main: Lang.

Austin, Jennifer R.; Stefan Engelberg; and Gisa Rauh. 2004. Current issues in the syntax and semantics of adverbials. *Adverbials. The Interplay between Meaning, Context, and Syntactic Structure*, ed. by Austin, Jennifer R.; Stefan Engelberg; and Gisa Rauh, 1-44. Amsterdam/Philadelphia: Benjamins.

Bach, Emmon. 1965. On some recurrent types of transformations. *Georgetown University monograph series on languages and linguistics* 18.3-18.

Baker, Marc C. 1988. *Incorporation. A theory of grammatical function changing*. Chicago: The University of Chicago Press.

Baldwin, Timothy. 2005. Looking for prepositional verbs in corpus data. *Proceedings of the Second ACL-SIGSEM Workshop on the Linguistic Dimensions of Prepositions and their Use in Computational Linguistics Formalisms and Applications*, 180–189. Colchester.

Baldwin, Timothy; Valia Kordoni; and Aline Villavicencio. 2009. Prepositions in Applications: A Survey and Introduction to the Special Issue. *Computational Linguistics* 35.119-149.

Barðdal, Jóhanna. 2011a. *Productivity: Evidence from Case and Argument Structure in Icelandic*. Amsterdam: Benjamins.

Barðdal, Jóhanna. 2011b. Lexical vs. Structural Case: A False Dichotomy. *Morphology* 21.619–659.

Barlow, Michael. Usage, Blends and Grammar. *Usage-Based Models of Language*, ed. by Barlow, Michael; and Suzanne Kemmer, 315-346. Stanford: CSLI Publications.

Barlow, Michael; and Suzanne Kemmer (eds.) 2000. *Usage-Based Models of Language*. Stanford: CSLI Publications.

Baroni, Marco; and Adam Kilgarriff. 2006. Large linguistically-processed Web corpora for multiple languages. *Proceedings of European ACL*, 87-90.

Bayer, Josef; and Markus Bader. 2006. On the syntax of prepositional phrases. *Interface and Interface Conditions*, ed. by Späth, Andreas, 157–179. Berlin/NewYork: Mouton de Gruyter.

Bayer, Joseph; Markus Bader; and Michael Meng. 2001. Morphological underspecification meets oblique case: Syntactic and processing effects in German. *Lingua* 111.465–514.

Becker, Alton L.; David G. Arms. 1969. Prepositions as Predicates. *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, ed by. Binnick, Robert I. et al., 1-11. Chicago: University of Chicago.

Belica, Cyril. 1995. *Statistische Kollokationsanalyse und Clustering. Korpuslinguistische Analysemethode*. Mannheim: Institut für Deutsche Sprache.

Benware, Wilbur. 1992. Prepositions as encoders of abstract relations. *On Germanic linguistics. Issues and Methods*, ed. by Rauch, Irmengard; Gerald F. Carr; and Robert Kyes, 13-20. Berlin/New York: Mouton de Gruyter.

Berkenfield, Catie. 2001. The role of frequency in the realization of English *that*. *Frequency and the Emergence of Linguistic Structure*, ed. by Bybee, Joan; and Paul Hopper, 281-307. Amsterdam/Philadelphia: Benjamins.

Berlin-Brandenburgische Akademie der Wissenschaften. *Digitales Wörterbuch der Deutschen Sprache (DWDS*). http://www.dwds.de/. 01/24/2013.

Berlin-Brandenburgische Akademie der Wissenschaften; and Akademie der Wissenschaften zu Göttingen. *Deutsches Wörterbuch von Jacob und Wilhelm Grimm. Neubearbeitung*. Stuttgart: Hirzelverlag.

Biber, Douglas. 2000. Investigating Language Use through Corpus-Based Analyses of Association Patterns. *Usage-Based Models of Language*, ed. by Barlow, Michael; and Suzanne Kemmer, 287-313. Stanford: CSLI Publications.

Biber, Douglas; Susan Conrad; and Randi Reppen. 1998. *Corpus linguistics. Investigating language structure and use.* Cambridge: Cambridge University Press.

Bibliographisches Institut GmbH. 2012. *Duden online*. http://www.duden.de/woerterbuch. 01/24/2013.

Boas, Hans Ulrich. 1997. Prepositional Stranding im Englischen (und Deutschen?). *Lexikalische und grammatische Eigenschaften präpositionaler Elemente*, ed. by Haumann, Dagmar; and Stefan Schierholz, 185-206. Tübingen: Niemeyer.

Boas, Hans C. 2003. *A Constructional Approach To Resultatives.* Stanford: CSLI Publications.

Boas, Hans C. 2005. Semantic Frames as Interlingual Representations for Multilingual Lexical Databases. *International Journal of Lexicography* 18.445-478.

Boas, Hans C. (ed.) 2009. Multilingual FrameNets in Computational Lexicography: Methods and Applications. Berlin: de Gruyter.

Boas, Hans C. 2010. Linguistically relevant meaning elements of English communication verbs. *Belgian Journal of Linguistics* 24.54-82.

Boas, Hans C. 2011. Zum Abstraktionsgrad von Resultativkonstruktionen. *Sprachliches Wissen zwischen Lexikon und Grammatik,* ed.by Engelberg, Stefan; Kristel Proost; and Anke Holler, 37-69. Berlin/New York: Mouton de Gruyter.

Boas, Hans C. 2013a. Cognitive Construction Grammar. *Oxford Handbook of Construction Grammar*, ed. by Hoffmann, Thomas and Graeme Trousdale, 233-254. Oxford/New York: Oxford University Press.

Boas, Hans C. 2013b. Zur Architektur einer konstruktionsbasierten Grammatik des Deutschen. *Grammatik als Inventar von Konstruktionen? Sprachliches Wissen im Fokus der Konstruktionsgrammatik*, ed. by Ziem, Alexander; and Alexander Lasch. Berlin/New York: de Gruyter, to appear

Boettcher, Wolfgang. 1999. Der Kampf mit dem Präpositionalobjekt. *Zur Praxis des Grammatikunterrichts. Mit Materialien für Lehrer und Schüler*, ed. by Bremerich-Vos, Albert, 193-252. Freiburg i.Br.: Fillibach.

Bouillon, Henri. 1977. *Zur deutschen Präposition 'auf'*. Diss. Université Catholique de Louvain.

Bouillon, Henri. 1979. Kontrastive Syntagmatik der deutschen Präpositionen *auf* und *über*. *Mélanges de linguistique et de littérature offerts au professeur H. Draye*, ed. by Lerot, Jacques; and Rudolf Kern, 4-17. Louvain: Nauwelaerts.

Bouillon, Henri. 1984. *Zur deutschen Präposition 'auf'*. Tübingen: Narr.

Boyland, Joyce T. 1996. Morphosyntactic Change in Progress: A Psycholinguistic Approach. Dissertation: University of California at Berkeley.

Breaux, Brooke O.; and Michelle I. Feist. 2010. Extending beyond space. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society*, ed. by Stellan Ohlsson; and Richard Catrambone, 1601-1606. Austin, TX: Cognitive Science Society.

Breindl, Eva. 1989. *Präpositionalobjekte und Präpositionalobjektsätze im Deutschen.* Tübingen: Niemeyer.

Breindl, Eva. 2006. Präpositionalphrasen. *Dependenz und Valenz. Ein internationales Handbuch der zeitgenössischen Forschung: Halbbd. 2,* ed. by Ágel, Vilmos; Ludwig M. Eichinger; Hans-Werner Eroms; Peter Hellwig; Hans Jürgen Heringer; and Henning Lobin, 936-951. Berlin/New York: de Gruyter.

Bresnan, Joan. 2001. *Lexical Functional Syntax*. Oxford: Blackwell Publishers.

Brinkmann, Hennig. 1971. *Die deutsche Sprache. Gestalt und Leistung.* Düsseldorf: Pädagogischer Verlag Schwann.

Brinton, Laurel. 2000. *The Structure of modern English: a linguistic introduction*. Amsterdam/Philadelphi: Benjamins.

Brinton, Laurel; and Elizabeth Closs Traugott. 2005. *Lexicalization and Language Change*. Cambridge: Cambridge University Press.

Brugman, Claudia. 1988a. *The story of 'over': Polysemy, semantics and the structure of the lexicon*. New York: Garland Press. [1981. *Story of 'over'*. Berkeley, CA: UC-Berkeley M.A. thesis.]

Brugman, Claudia 1988b. *Polysemy, semantics and the structure of the lexicon*. New York: Garland Publishing, Inc.

Brugman, Claudia; and George Lakoff. 2006. Cognitive topology and lexical networks. *Cognitive Linguistics: Basic Readings*, ed. by Geeraerts, Dirk. Berlin/New York: Mouton de Gruyter.

Burchardt, Aljoscha; Katrin Erk; Anette Frank; Andrea Kowalski; Sebastian Pado; and Manfred Pinkal. 2006. The SALSA corpus: a German corpus resource for lexical semantics. *Proceedings of LREC-06*, Genoa.

Burchardt, Aljoscha; Katrin Erk; Anette Frank; Andrea Kowalski; Sebastian Pado; and Manfred Pinkal. 2009. Using FrameNet for the semantic analysis of German: annotation, representation, and automation. *Multilingual FrameNets in Computational Lexicography: Methods and Applications*, ed. by Boas, Hans C., 209-244. Berlin/New York: Mouton de Guyter.

Bybee, Joan. 1994. A view of phonology from a cognitive and functional perspective. *Cognitive Linguistics* 5.285-305.

Bybee, Joan. 1995. Regular morphology and the lexicon. *Language and Cognitive Processes* 10.425-455.

Bybee, Joan. 2000. The Phonology of the Lexicon: Evidence From Lexical Diffusion. *Usage-Based Models of Language*, ed. by Barlow, Michael; and Suzanne Kemmer, 65-86. Stanford: CSLI Publications.

Bybee, Joan. 2003. Mechanisms of Change in Grammaticalization: The Role of Frequency. *The Handbook of Historical Linguistics*, ed. by Joseph, Brian; and Richard D. Janda, 602-623. Oxford: Blackwell.

Bybee, Joan. 2007. *Frequency of use and the organization of language*. Oxford: Oxford University Press.

Bybee, Joan. 2013. Usage-Based Theory and Exemplar Representations of Constructions. *The Oxford Handbook of Construction Grammar*, ed. by Hoffmann, Thomas; and Graeme Trousdale, 49-69. New York/Oxford: Oxford University Press.

Cannesson, Emmanuelle and Patrick Saint-Dizier. 2002. Defining and representing preposition senses: A preliminary analysis. *Proceedings of the ACL-02 Workshop on Word Sense Disambiguation: Recent Successes and Future Directions*, 25–31, Philadelphia, PA.

Campe, Petra. 1994. *Case, semantic roles, and grammatical relations: a comprehensive bibliography.* Amsterdam/Philadelphia: Benjamins.

Chomsky, Noam. 1965. *Aspects of the theory of syntax.* Cambridge: The MIT Press.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, Noam. 1986a. *Barriers.* Cambridge/Mass.: MIT Press.

Chomsky, Noam. 1986b. *Knowledge of language: Its nature, origin, and use*. New York: Praeger.

Chomsky, Noam; and Howard Lasnik. 1993. Principles and parameters theory. *Syntax: An International handbook of contemporary research*, ed. by von Stechow, Arnim; Joachim Jacobs; Wolfgang Sternefeld; and Theo Vennemann, 506-569. Berlin: de Gruyter.

Clark, Herbert H. 1996. *Using Language.* Cambridge: Cambridge University Press.

Colliander, Peter. 1999. Partikelvalenz im Deutschen. Eine prototypenlinguistische Studie über die Valenzverhältnisse bei den Präpositionen, den Subjunktoren und den Konjunktoren. *Deutsche Sprache* 27.27-51.

Cosme, Christelle and Gaëtanelle Gilquin. 2008. Free and bound prepositions in a contrastive perspective: The case of with and avec. *Phraseology: An Interdisciplinary Perspective*, ed. by Granger, Sylviane; and Fanny Meunier, 259–274. Amsterdam: Benjamins.

Croft, William; and D. Alan Cruse. 2004. *Cognitive Linguistics*. Cambridge: Cambridge University Press.

Cuyckens, Hubert. 1991. *The Semantics of Spatial Prepositions in Dutch.* PhD thesis, Universitaire Instelling Antwerpen.

Cuyckens, Hubert. 1997. Prepositions in Cognitive Lexical Semantics. *Lexikalische und grammatische Eigenschaften präpositionaler Elemente*, ed. by Haumann, Dagmar; and Stefan J. Schierholz, 63-82. Tübingen: Niemeyer.

Cuyckens, Hubert, and Günter Radden (eds.) 2002. *Perspectives on prepositions*. Tübingen: Niemeyer.

Czepluch, Hartmut. 1996. *Kasus im Deutschen und Englischen: Ein Beitrag zur Theorie des abstrakten Kasus*. Tübingen: Niemeyer.

Deane, Paul. D. 1992. Polysemy as the consequence of internal conceptual complexity: The case of 'over'. *Proceedings of the Eastern States Conference on Linguistics (ESCOL)*, 32-43. Ohio State University: CLC Publications.

Dewell, Robert. 1994. ‚Over' again: Image-schema transformations in semantic analysis. *Cognitive Linguistics* 5.351-80.

Di Meola, Claudio. 2000. *Die Grammatikalisierung deutscher Präpositionen*. Tübingen: Stauffenberg.

Domínguez Vázquez, María José. 2005. *Die Präpositivergänzung im Deutschen und im Spanischen. Zur Semantik der Präpositionen*. Frankfurt a.M.: Lang.

Dowty, David-R. 1991. Thematic proto-roles and argument selection. *Language* 67.547–619.

Dudenredaktion. 1998. *Duden, Grammatik der deutschen Gegenwartssprache*. Mannheim/Leipzig/Wien/Berlin: Dudenverlag.

Dürscheid, Christa. 1997. Perspektivierte Syntax. *Sprache im Fokus. Festschrift für Heinz Vater zum 65. Geburtstag*, ed. by Dürscheid, Christa; Karl Heinz Ramers; and Monika Schwarz, 255-272. Tübingen: Niemeyer.

Dürscheid, Christa. 1999. *Die verbalen Kasus des Deutschen. Untersuchungen zur Syntax, Semantik und Perspektive*. Berlin/New York: Mouton de Gruyter.

Dürscheid, Christa. 2007. Quo vadis, Casus? Zur Entwicklung der Kasusmarkierung im Deutschen. *Wahlverwandschaften. Valenzen – Verben – Varietäten. Festschrift für Klaus Welke zum 70. Geburtstag*, ed. by Lenk, Hartmut E. H; and Maik Walter, 89-112. Hildesheim: Olms.

Ellis, Nick C. 2008. The periphery and the heart of language. *Phraseology: An interdisciplinary perspective*, ed. by Meunier, Fanny; and Sylviane Granger, 1-13. Amsterdam/Philadelphia: Benjamins.

Ellsworth, Michael; Katrin Erk, Paul Kingsbury, and Sebastian Padó. 2004. Prop-Bank, SALSA and FrameNet: How design determines product. *Proceedings of the LREC 2004 Workshop on Building Lexical Resources from Semantically Annotated Corpora*, Lisbon.

Emonds, Joseph E. 1976. *A transformational approach to English syntax: Root, structure-preserving and local transformations*. New York: Academic Press.

Emonds, Joseph E. 1985. *A unified theory of syntactic categories*. Dordrecht: Foris Publications.

Engel, Ulrich. 1991. *Deutsche Grammatik.* Heidelberg: J. Groos.

Engel, Ulrich. 1996. Semantische Relatoren. Ein Entwurf für zukünftige Valenzwörterbücher. *Semantik, Lexikographie und Computeranwendungen*, ed. by Weber, Nico, 223-236. Tübingen: Niemeyer.

Engelberg, Stefan. 2000. *Verben, Ereignisse und das Lexikon*. Tübingen: Niemeyer.

Engelberg, Stefan; Anke Holler; and Kristel Proost (eds.) 2010. *Sprachliches Wissen zwischen Lexikon und Grammatik.* Berlin/Boston: de Gruyter.

Engelberg, Stefan; Svenja König; Kristel Proost; Edeltraud Winkler. 2010. Argumentstrukturmuster als Konstruktionen? Identität – Verwandtschaft – Idiosynkrasien. *Sprachliches Wissen zwischen Lexikon und Grammatik*, ed. by Engelberg, Stefan; Anke Holler; and Kristel Proost, 71-112. Berlin, Boston: de Gruyter.

Engelen, Bernhard. 1970. Das Präpositionalobjekt im Deutschen und seine Entsprechungen im Englischen, Französischen und Russischen. Eine kontrastive Studie im Bereich der lexikalischen Felder. *Forschungsberichte des Instituts für deutsche Sprache*, Band 4, ed. by Engel, Ulrich, 3-30. Mannheim: Institut für deutsche Sprache.

Erk, Katrin; Andrea Kowalski; Sebastian Padó, and Manfred Pinkal. 2003. Towards a Resource for Lexical Semantics: A Large German Corpus with Extensive Semantic Annotation. *Proceedings of the 41st Annual Meeting of the Association Computational Linguistics*, Sapporo, Japan. 537-544.

Eroms, Hans-Werner. 1981. *Valenz, Kasus und Präpositionen. Untersuchungen zur Syntax und Semantik präpositionaler Konstruktionen in der deutschen Gegenwartssprache*. Heidelberg: C. Winter.

Eroms, Hans-Werner. 1991. Valenzgebundene Präpositionalkonstruktionen im Deutschen. *Die deutsche Sprache – Gestalt und Leistung. H. Brinkmann in der Diskussion*, ed. by Harweg, Roland; Shado Kishitani; and Maximilian Scherner, 39-54. Münster: Nodus Publikationen.

Evans, Vyvyan; and Andrea Tyler. 2004. 157-192. Spatial experience, lexical structure and motivation: The case of 'in'. *Studies in linguistic motivation*, ed. by Radden, Günter; and Klaus-Uwe Panther, 157-192. The Hague/Berlin: Mouton de Gruyter.

Evans, Vyvyan. 2006. Lexical concepts, cognitive models and meaning-construction. *Cognitive Linguistics* 17.491–534.

Evans, Vyvyan. 2010. From the spatial to the non-spatial: the 'state' lexical concepts of *in*, *on* and *at. Language, Cognition and Space: The State of the Art and New Directions*, ed. by Chilton, Paul; end Vyvyan Evans, 215–248. London: Equinox Publishing.

Evans, Vyvyan and Andrea Tyler. 2004. Spatial experience, lexical structure and motivation: The case of *in. Studies in Linguistic Motivation*, ed. by Radden, Günther; and K. Panther, 157–192. Berlin: Mouton de Gruyter.

Faaß, Gertrud; Ulrich Heid; and Helmut Schmid. 2010. Design and application of a Gold Standard for morphological analysis: SMOR in validation. *Proceedings of the seventh LREC conference*. May 19 - 21, 2010, Valetta, Malta, 803 - 810.

Faulhaber, Susen. 2011. *Verb Valency Patterns. A Challenge for Semantics-Based Accounts*. Berlin/New York: Mouton de Gruyter.

Feist, Michele. 2010. Inside *in* and *on*: Typological and psycholinguistic perspectives. *Language, Cognition and Space: The State of the Art and New Directions*, ed. by Chilton, Paul; and Vyvyan Evans, 215–248. London: Equinox Publishing.

Fellbaum, Christiane. 2005. WordNet and wordnets. *Encyclopedia of Language and Linguistics*, Second Edition, ed. by Brown, Keith E.; Anne H. Anderson; Laurie Bauer; Graeme Hirst; and Jim Miller, 665-670. Oxford: Elsevier.

Fillmore, Charles J. 1966. Toward a modern theory of case. *Modern Studies in English*, ed. by Reibel, David A.; and Sanford A. Schane, 361-375. Englewood Cliffs, NJ: Prentice-Hall.

Fillmore, Charles J. 1968. The case for Case. *Universals in Linguistic Theory*, ed. by Bach, Emmon; and Robert T. Harms, 1-88. New York: Holt, Rinehart and Winston.

Fillmore, Charles J. 1977a. The Case for Case reopened. *Syntax and Semantics 8: Grammatical Relations*, ed. by Cole, Peter; and Jerrold M. Sadock, 59-81. New York: Academic Press.

Fillmore, Charles J. 1977b. Topics in Lexical Semantics. *Current Issues in Linguistic Theory*, ed. by Cole, Roger W., 76-138. Bloomington: Indiana University Press.

Fillmore, Charles J. 1982. Frame semantics. *Linguistics in the Morning Calm*, ed. by the Linguistic Society of Korea, 111-137. Seoul, South Korea: Hanshin Publishing Co.

Fillmore, Charles J. 1985a. Frames and the semantics of understanding. *Quaderni di Semantica* 6.222-254.

Fillmore, Charles J. 1986. Pragmatically Controlled Zero Anaphora. *Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society*, 95-107. Berkeley.

Fillmore, Charles J.; and Beryl T. Atkins. 1992. Towards a Frame-based organization of the lexicon: the semantics of RISK and its neighbors. *Frames, Fields, and Contrasts*, ed. by Lehrer, Adrienne; and Eva Kittay, 75-102. Hillsdale: Lawrence Erlbaum.

Fillmore, Charles J.; and Collin F. Baker. 2010. A frames approach to semantic analysis. *The Oxford Handbook of Linguistic Analysis*, ed. by Heine, Bernd; and Heiko Narrog, 313–340. Oxford: Oxford University Press.

Fillmore, Charles J.; Collin F. Baker, and Hirosaki Sato. 2002. The FrameNet Database and Software Tools. *Proceedings of the European Association for Lexicography*, 1157-1160. Copenhagen, Denmark.

Fillmore, Charles J.; and Paul Kay. 1993. *Construction Grammar*. Manuscript. University of California at Berkeley.

Fillmore, Charles J.; Paul Kay; and Mary Catherine O'Connor. 1988. Regularity and Idiomaticity in Grammatical Constructions: The Case of 'let alone'. *Language* 64.501-538.

Fillmore, Charles J.; Christopher R. Johnson; and Miriam R. L. Petruck. 2003. Background to FrameNet. *International Journal of Lexicography*, 16.235-250.

Frawley, William. 1992. *Linguistic Semantics*. Hillsdale, NJ: Lawrence Erlbaum.

Fried, Mirjam; and Hans C. Boas (eds.) 2005. *Grammatical constructions. Back to the roots.* Amsterdam/Philadelphia: Benjamins.

Fries, Norbert. 1988. Deutsche Präpositionen und Präpositionalphrasen aus der Sicht der angewandten kontrastiven Linguistik. *Deutsch als Fremdsprache* 25.331-336.

Fries, Norbert. 1991. Präpositionen und Präpositionalphrasen im Deutschen, im Altgriechischen und im Neugriechischen. *DET, COMP und INFL: Zur Syntax funktionaler Kategorien und grammatischer Funktionen*, ed. by Olsen, Susan; and Gisbert Fanselow, 73-82. Tübingen: Niemeyer.

Frings, Theodor / Müller, Gertrud. 1968. Nhd. auf, Präposition. *Germanic Studies in Honor of Edward H. Sehrt*, ed. by Raven, Frithjof Andersen et al., 83-89. Coral Gables: University of Miami Press.

Fröhlich, Barbara. 2003. *Schwierigkeiten bei der Verwendung deutscher Präpositionen in gebundener Struktur. Theorie und Beispiele.* Universität Duisburg-Essen: Redaktion LINSE (Linguistik-Server Essen).

Geeraerts, Dirk. 2006. *Words and Other Wonders: Papers on Lexical and Semantic Topics*. Berlin/New York: Mouton de Gruyter.

Givón, Talmy. 2005. *Context as Other Minds. The Pragmatics of Sociality, Cognition and Communication.* Amsterdam/Philadelphia: Benjamins.

Glück, Helmut (ed.) 2000. *Metzler-Lexikon Sprache*. Stuttgart/Weimar: Metzler.

Goldberg, Adele E. 1995. *Constructions. A Construction Grammar Approach to Argument Structure*. Chicago/London: University of Chicago Press.

Goldberg, Adele E. 1999. The emergence of the semantics of argument structure constructions. *The Emergence of Language*, ed. by MacWhinney, Brian, 197-213. Mahwah, NJ: Lawrence Erlbaum Associates.

Goldberg, Adele E. 2006. *Constructions at Work. The Nature of Generalization in Language*. Oxford: Oxford University Press.

Goldberg, Adele E. 2011. Meaning Arises from Words, Context, *and* Phrasal Constructions. *Zeitschrift für Anglistik und Amerikanistik (ZAA)* 59.317-329.

Goldberg, Adele; and Ray Jackendoff. 2004. The English resultative as a family of constructions. *Language* 80.532–568.

Grice, H. P. 1975. Logic and conversation. *Syntax and Semantics, 3: Speech Acts*, ed. by Cole, Peter; and Jerry L. Morgan, 41-48. New York: Academic Press.

Grießhaber, Wilhelm. 1999. Präpositionen als relationierende Prozeduren. *Grammatik und mentale Prozesse*, ed. by Redder, Angelika; and Jochen Rehbein, 241-260. Tübingen: Stauffenburg.

Grießhaber, Wilhelm. 2007. Präposition. *Handbuch der deutschen Wortarten*, ed. by Hoffmann, Ludger, 629-655. Berlin/New York: Mouton de Gruyter.

Grimm, Jacob; and Wilhelm Grimm. 1854-1960. *Das Deutsche Wörterbuch.* Leipzig: Hirzel.

Gruber, Jeffrey S. 1965. *Studies in lexical relations.* Unpublished Ph.D. thesis, MIT.

Hale, Kenneth and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. by Hale, Kenneth; and Samuel Jay Keyser, 53–109. Cambridge, MA.: MIT Press.

Hallan, Naomi. 2000. Paths to prepositions? A corpus-based study of the acquisition of a lexico-grammatical category. *Frequency and the emergence of linguistic structure*, ed. by Bybee, Joan; and Paul Hopper, 91-120. Amsterdam/Philadelphia: Benjamins.

Halliday, Michael A. K. 2004. *An Introduction to Functional Grammar*. London: Arnold.

Hanks, Patrick. 2000. Do Word Meanings Exist? *Computers and the Humanities* 34. 205-215.

Helbig, Gerhard. 1982. *Valenz, Satzglieder, semantische Kasus, Satzmodelle.* Leipzig: Verlag Enzyklopädie.

Helbig, Gerhard. 1992. *Probleme der Valenz- und Kasustheorie*. Tübingen: Niemeyer.

Helbig, Gerhard; and Joachim Buscha. 2001. *Deutsche Grammatik. Ein Handbuch für den Ausländerunterricht.* Berlin: Langenscheidt.

Helmantel, Marjon. 1998. Die Position und Distribution der PP. *Nowele* 34. 23-42.

Hennig, Mathilde. 2011. Satzglieder in Schulgrammatik und Linguistik. *Grammatik--Lehren, Lernen, Verstehen: Zugänge zur Grammatik des Gegenwartsdeutschen*, ed. by Köpcke, Klaus-Michael; and Arne Ziegler, 127-152. Berlin/Boston: Mouton de Gruyter.

Herbst, Thomas. 2011. The Status of Generalizations: Valency and Argument Structure Constructions. *Zeitschrift für Anglistik und Amerikanistik (ZAA)* 59. 347-367.

Heringer, Hans-Jürgen. 1968. Präpositionale Ergänzungsbestimmungen im Deutschen. *Zeitschrift für deutsche Philologie* 87.462-457.

Heringer, Hans-Jürgen. 1984. Neues von der Verbszene. *Pragmatik in der Grammatik*, ed. by Stickel, Gerhard, 34-63. Düsseldorf: Schwann.

Hertel, Volker. 1983. Präpositionen in fixierten Fügungen. *Beiträge zur Erforschung der deutschen Sprache* 3.58-77.

Hölzner, Matthias. 2007. *Substantivvalenz. Korpusgestützte Untersuchungen zu Argumentrealisierungen deutscher Substantive*. Tübingen: Niemeyer.

Hoffmann, Thomas; and Graeme Trousdale (eds.) 2013a. *The Oxford Handbook of Construction Grammar*. Oxford/New York: Oxford University Press.

Hoffmann, Thomas; and Graeme Trousdale. 2013b. Construction Grammar. Introduction. *The Oxford Handbook of Construction Grammar*, 1-14. Oxford/New York: Oxford University Press.

Hopper, Paul J.; and Elizabeth Closs Traugott. 1993. *Grammaticalization*. Cambridge, MA: Cambridge University Press.

Hottenroth, Priska-Monika. 1991. Ein kognitiv orientiertes, zweistufiges Modell für die Semantik lokaler Präpositionen. *Approaches to prepositions*, ed. by Rauh, Gisa, 77-107. Tübingen: Narr.

Hundt, Markus. 2001. Grammatikalisierungsphänomene bei Präpositionalobjekten in der deutschen Sprache. *Zeitschrift für germanistische Linguistik* 29.167-191.

Iwata, Seizi. 2008. *Locative Alternation. A lexical-constuctional approach.* Amsterdam/Philadelphia: Benjamins.

Jackendoff, Ray. 1973. The base rules for prepositional phrases. *A Festschrift for Morris Halle*, ed. by Anderson, Stephen; and Paul Kiparsky, 345-356. New York: Holt, Rinehart and Winston.

Jackendoff, Ray; and Steven Pinker. 2005. The nature of the language faculty and its implications for evolution of language (Reply to Fitch, Hauser, and Chomsky). *Cognition* 97.211-225.

Jacobs, Joachim. 1994. Das lexikalische Fundament der Unterscheidung von fakultativen und obligatorischen Ergänzungen. *Zeitschrift für Germanistische Linguistik* 22.284–319.

Jacobs, Joachim. 1994. *Kontra Valenz*. Trier: Wissenschaftlicher Verlag Trier.

Jacobs, Joachim. 2008. Wozu Konstruktionen? *Linguistische Berichte* 213.3-44.

Jacobs, Joachim. 2009. Valenzbindung oder Konstruktionsbindung? Eine Grundfrage der Grammatiktheorie. *Zeitschrift für germanistische Linguistik* 37.490-513.

Katsika, Argyro; David Braze; Ashwini Deo; and Maria Mercedes Piñango. 2012. Complement Coercion: Distinguishing between type-shifting and pragmatic inferencing. *The Mental Lexicon* 7.58–76.

Kay, Paul; and Charles J. Fillmore. 1999. Grammatical Constructions and Linguistic Generalizations: The 'What's X doing Y?' Construction. *Language* 75.1-33.

Kemmer, Suzanne; and Michaeal Barlow. 2000. A Usage-Based Conception of Language. *Usage-Based Models of Language*, ed. by Barlow, Michael; and Suzanne Kemmer, vii-xxviii. Stanford: CSLI Publications.

Kempcke, Günter. 2000. *Wörterbuch Deutsch als Fremdsprache*. Berlin/New York: de Gruyter.

Kiss, Tibor. 2007. Produktivität und Idiomatizität von Präposition-Substantiv-Sequenzen. *Zeitschrift für Sprachwissenschaft* 26.317-345.

Klappenbach, Ruth; and Wolfgang Steinitz. 1961-1977. *Wörterbuch der deutschen Gegenwartssprache*. Berlin: Akademie-Verlag.

Klaus, Cäcilia. 1999. *Grammatik der Präpositionen*. Frankfurt a.M: Lang.

Klumpp, Franziska. 1997. Zu den Ursachen der Ungrammatikalität von Präpositionsstranden im Deutschen. *Neuphilologische Mitteilungen* 98.147-159.

Köpcke, Klaus-Michael; and Arne Ziegler (eds.) 2011. *Grammatik--Lehren, Lernen, Verstehen: Zugänge zur Grammatik des Gegenwartsdeutschen*. Berlin/Boston: Mouton de Gruyter.

Kolehmeinen, Leena. 2010. From a spatial adposition to a grammatical relations' marker: Contact- and context-induced grammaticalization and their interaction. *Lähivőrdlusi. Lähivertailuja* 20:98-154.

Kowalski, Wojciech. 2000. *Aspekte einer pragmatischen Begründung syntaktischer Funktionen. Valenzbedingte Präpositionalobjekte im Deutschen*. Kielce: Akademia Swietokrzyska im. Jana Kochanowskiego.

Kracht, Marcus. 2003. Against the feature bundle theory of case. *New Perspectives on Case Theory*, ed. by Brandner, Ellen; and Heike Zinsmeister, 165–192. Stanford: CSLI Publications.

Kupietz, Marc; Cyril Belica: Holger Keibel; and Andreas Witt. 2010. The German Reference Corpus DeReKo: A primordial sample for linguistic research. *Proceedings of the 7th conference on International Language Resources and Evaluation (LREC 2010)*, ed. by Calzolari, Nicoletta et al., 1848-1854. Valletta, Malta: European Language Resources Association (ELRA).

Kupietz, Marc; and Holger Keibel. 2009. The Mannheim German Reference Corpus (DeReKo) as a basis for empirical linguistic research. *Working Papers in Corpus-based Linguistics and Language Education, No. 3*, ed. by Minegishi, Makoto; and Yuji Kawaguchi, 53-59. Tokyo: Tokyo University of Foreign Studies (TUFS).

Lakoff, George. 1987. *Women, Fire, and Dangerous Things*. Chicago: Chicago University Press.

Lakoff, George; and Mark Johnson. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press.

Langacker, Ronald W. 1987. *Foundations of Cognitive Grammar*. Vol. I: Theoretical Prerequisites. Stanford: Stanford University Press.

Langacker, Ronald W. 1997. Constituency, dependency, and conceptual grouping. *Cognitive Linguistics* 8.1-32.

Langacker, Ronald W. 2005. Integration, grammaticization, and constructional meaning. *Grammatical Constructions: Back to the Roots*, ed. by Fried, Mirjam, and Hans C. Boas, 157-189. Amsterdam/ Philadelphia: Benjamins.

Lehmann, Christian. 1985. Grammaticalization: Synchronic Variation and Diachronic Change. *Lingua e Stile* 20.303-318.

Lehmann, Christian. 2002. New reflections on grammaticalization and lexicalization. *New reflections on grammaticalization*, ed. by Ilse Wischer; and Gabriele Diewald, 1-18. Berlin/New York: Mouton de Gruyter.

Lehmann, Christian; and Christel Stolz. 1992. *Bildung von Adpositionen im Deutschen. ASSidUE Arbeitspapiere des Seminars für Sprachwissenschaft der Universität Erfurt,* Nr. 6, ed. by Lehmann, Christian, 3-44. Erfurt: Seminar für Sprachwissenschaft der Universität.

Lerot, Jacques. 1973. Plädoyer für eine vielschichtige Syntax. *Linguistische Perspektiven*, ed. by Ten Cate, Abraham P.; and Peter Jordens, 114-129. Tübingen: Niemeyer.

Lerot, Jacques. 1982. Die verbregierten Präpositionen in Präpositionalobjekten. *Satzglieder im Deutschen. Vorschläge zur syntaktischen, semantischen und pragmatischen Fundierung*, ed. by Abraham, Werner, 261-291. Tübingen: Narr.

Lestrade, Samuel Alexander Maximilian. 2010. *The space of case*. UB Nijmegen [Host].

Levin, Beth. 1993. *English Verb Classes and Alternations*. Chicago: University of Chicago Press.

Levin, Beth; and Malka Rappaport Hovav. 2005. *Argument Realization*. Cambridge, MA.: Cambridge University Press.

Liamkina, Olga. 2007. Semantic Structure of the German Spatial Particle 'über'. *Journal of Germanic Linguistics* 19.115-160.

Lightfoot, David W. 1979. *Principles of Diachronic Syntax*. Cambridge: Cambridge University Press.

Litkowski, Kenneth C. 2007. Integrating Data from The Preposition Project into FrameNet. http://www.clres.com/online-papers/wp0701.pdf. 11/30/2012.

Litkowski, Ken; and Orin Hargraves. 2005. The Preposition Project. *Proceedings of the Second ACL-SIGSEM Workshop on the Linguistic Dimensions of Prepositions and their Use in Computational Linguistics Formalisms and Applications*, 171–179. Colchester.

Litkowski, Kenneth C.; and Orin Hargraves. 2007. SemEval-2007 task 06: Word-sense disambiguation of prepositions. *Proceedings of the 4th International Workshop on Semantic Evaluations*, 24–29. Prague.

Maienborn, Claudia. 1990. Position und Bewegung: Zur Semantik lokaler Verben. *IWBS-Report*. IBM Stuttgart.

Maienborn, Claudia. 1994. Kompakte Strukturen: Direktionale Präpositionalphrasen und nicht-lokale Verben. *Kognitive Linguistik. Repräsentation und Prozesse*, ed. by Felix, Sascha W.; Christopher Habel; and Gert Rickheit, 229-249. Opladen: Westdeutscher Verlag GmbH.

Maienborn, Claudia. 1996. *Situation und Lokation: Die Bedeutung lokaler Adjunkte von Verbalprojektionen.* Tübingen: Stauffenburg.

Majorin, Mariikka. 2008. *Zur Sättigung der Valenz in den Kleinen Meldungen des Typus Notiz: Eine pragmatisch fundierte Analyse*. Frankfurt am Main: Lang.

Marková, Vera. 2012. *Synonyme unter dem Mikroskop. Eine korpuslinguistische Studie.* Tübingen: Narr.

Meints, Kerstin. 2003. Kategorisierung und frühes Verstehen von Nomina, Präpositionen und Verben. *Spracherwerb und Konzeptualisierung*, ed. by Haberzettl, Stefanie; and Heide Wegener, 71-88. Frankfurt am Main: Lang.

Meex, Birgitta. 2001. The spatial and non-spatial senses of the German preposition *über*. *Polysemy in Cognitive Linguistics: Selected papers from the International Cognitive Linguistics* Conference, Amsterdam, 1997, ed. by Cuyckens, Hubert; and Britta Zawada, 1-36. Amsterdam/Philadelphia: Benjamins.

Michaelis, Laura A. 2002. Headless Constructions and Coercion by Construction. *Mismatch: Form-function Incongruity and the Architecture of Grammar*, ed. by Francis, Elaine J.; and Laura A. Michaelis, 259-310. Stanford: CSLI Publications.

Michaelis, Laura A. 2005. Entity and event coercion in a symbolic theory of syntax. *Construction Grammars: Cognitive grounding and theoretical extensions*, ed. by Östman, Jan-Ola; and Mirjam Fried, 45-88. Amsterdam/Philadelphia: Benjamins.

Mikosch, Ingrid. 1987. *Die Präpositionen in gesprochener Sprache: Vorkommen und Funktion untersucht an Tonbandaufnahmen aus Baden-Württemberg, Bayrisch-Schwaben und Vorarlberg*. Tübingen: Niemeyer.

Mithun, Marianne. 2002. An invisible hand at the root of causation: The role of lexicalization in the grammaticalization of causatives. *New Reflections on Grammaticalization*, ed. by Wischer, Ilse; and Gabriele Diewald, 237-258. Amsterdam/Philadelphia: Benjamins.

Müller, Wolfgang. 2012. *Wörterbuch deutscher Präpositionen. Die Verwendung als Anschluss an Verben, Substantive, Adjektive und Adverbien.* Berlin/New York: de Gruyter.

Nation, I. S. P. 1990. *Teaching and Learning Vocabulary*. New York: Newbury House.

Nation, I. S. P. 2001. *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.

Nüse, Ralf. 1998. Lexikalische Semantik als Psycholinguistik: Ein Experiment zum Polysemie/Monosemie-Problem bei Präpositionen. *Lexikalische Semantik aus kognitiver Sicht: Perspektiven im Spannungsfeld linguistischer und psychologischer Modellierungen*, ed. by Ludewig, Petra; and Bart Geurts, 119-140. Tübingen: Narr.

Ohara, Kyoko Hirose; Seiko Fujii; Toshio Ohori; Ryoko Suzuki; Hiroaki Saito; and Shun Ishizaki. 2004. The Japanese FrameNet project: An introduction. *Proceedings of the Workshop on Building Lexical Resources from Semantically Annotated Corpora at LREC-04*, Lisbon.

Östman, Jan-Ola; and Mirjam Fried (eds.) 2005. *Construction Grammars: Cognitive grounding and theoretical extensions*. Amsterdam/Philadelphia: Benjamins.

Palmer, Frank. 1994. *Grammatical Roles and Relations*. Cambridge: Cambridge University Press.

Pasch, Renate. 1977. Zum Status der Valenz. *Linguistische Studien* 42.1-50.

Paul, Hermann; Helmut Henne; Heidrun Kämper; and Georg Objartel. 2002. *Deutsches Wörterbuch: Bedeutungsgeschichte und Aufbau unseres Wortschatzes*. Tübingen: Niemeyer.

Petruck, Miriam R. L. 1996. Frame semantics. *Handbook of pragmatics*, ed. by Verschueren, Jef; Jan-Ola Östman; Jan Blommaert; and Chris Bulcaen, 1-13. Amsterdam/Philadelphia: Benjamins.

Pfeifer, Wolfgang. 1993. *Etymologisches Wörterbuch des Deutschen.* Berlin: Akademie-Verlag.

Pierrehumbert, Janet. 2001. Exemplar dynamics: word frequency, lenition and contrast. *Frequency and the emergence of linguistic structure*, ed. by Bybee, Joan; and Paul Hopper, 137-158. Amsterdam/Philadelphia: Benjamins.

Pittner, Karin. 1999. *Adverbiale im Deutschen. Untersuchungen zu ihrer Stellung und Interpretation*. Tübingen: Stauffenburg.

Postal, Paul M. 1971. *Cross-over phenomena*. New York: Holt, Rinehart and Winston.

Proost, Kristel. 2009. Warum man nach Schnäppchen jagen, aber nicht nach Klamotten bummeln kann. Die nach-Konstruktion zwischen Lexikon und Grammatik. *Konstruktionelle Varianz bei Verben* (=OPAL Sonderheft 4/2009), ed. by Winkler, Edeltraud, 10-41. Mannheim: Institut für Deutsche Sprache.

Rauh, Gisa. 1991. Prepositional forms in the lexicon: problems and suggestions. *Approaches to Prepositions*, ed. by Rauh, Gisa, 169-223. Tübingen: Narr.

Rauh, Gisa. 1993. On the grammar of lexical and non-lexical prepositions in English. *The Semantics of Prepositions: From Mental Processing to Natural Language Processing*, ed. by Zelinsky-Wibbelt, Cornelia, 99-150. Berlin/New York: Mouton de Gruyter.

Rauh, Gisa. 1995. Präpositionen und Rollen. *Sprachwissenschaft* 20.123-167.

Rauh, Gisa. 1999. Language-specific mental models: The case of English 'on' and German 'auf'. *The Construction of Knowledge, Learner Autonomy and Related Issues in Foreign Language Learning. Essays in Honour of Dieter Wolff*, ed. by Mißler, Bettina; and Uwe Multhaup, 109-125. Tübingen: Stauffenburg.

Rauh Gisa. 2000a. Wi(e)der die Wortarten! Zum Problem linguistischer Kategorisierung. *Linguistische Berichte* 184.485–507.

Rauh Gisa. 2000b. Don't call it 'X'! or: Why X does not represent grammatical categories. *Verbal projections,* ed. by Janßen, Hero, 1-21. Tübingen: Niemeyer.

Rauh, Gisa. 2002. Prepositions, features, and projections. *Perspectives on Prepositions*, ed. by Cuyckens, Hubert; and Günther Radden, 3-23. Tübingen: Niemeyer.

Riemsdijk, Henk C. van. 1978. *A case study in syntactic markedness: The binding nature of prepositional phrases*. Lisse: The Peter De Ridder Press.

Riemsdijk, Henk van. 1990. Functional prepositions. *Unity in diversity: papers presented to Simon C. Dik on his 50th birthday*, ed. by Pinkster, Harm; and Inge Genee, 229-242. Dordrecht: Foris Publications.

Rostila, Jouni. 2005. Zur Grammatikalisierung bei Präpositionalobjekten. *Grammatikalisierung im Deutschen*, ed. by Leuschner, Torsten; Tanja Mortelmans; and Sarah De Groodt, 135-166. Berlin/New York: Mouton de Gruyter.

Rostila, Jouni. 2007. *Konstruktionsansätze zur Argumentmarkierung im Deutschen.* Tampere: Tampere University Press.

Ruppenhofer, Josef; Michael Ellsworth; Miriam R. L. Petruck; Christopher R. Johnson; and Jan Scheffczyk. 2010. *FrameNet II: Extended Theory and Practice.* https://framenet2.icsi.berkeley.edu/docs/r1.5/book.pdf. 11/30/2012.

Saint-Dizier, Patrick. 2005. PrepNet: a Framework for Describing Prepositions: Prelimary Investigation Results, *Proc. IWCS 6*, Tilburg.

Saint-Dizier, Patrick. 2008. Syntactic and semantic frames in PrepNet. *Proceedings of the 3rd International Joint Conference on Natural Language Processing (IJCNLP-08)*, 763–768. Hyderabad.

Saint-Dizier, Patrick and Gloria Vazquez. 2001. A compositional framework for prepositions. *Proceedings of the Fourth International Workshop on Computational Semantics (IWCS*-4), 165–179. Tilburg.

Schiehlen, Michael. 2003. A Cascaded Finite-State Parser for German. *Proceedings of the Research Note Sessions of the 10th Conference of the European Chapter of the Association for Computational Linguistics (EACL'03)*, Budapest, April, 2003.

Schierholz, Stefan J. 1998. Zur Semantik der Präposition ‘auf’ in komplexen Nominalphrasen sowie notwendigen und möglichen Darstellungen im Wörterbuch. *Wörterbücher in der Diskussion III (= Lexicographica. Series Maior 84)*, ed. by Wiegand, Herbert E., 55-105. Tübingen: Niemeyer.

Schierholz, Stefan J. 2000. Governed Prepositions. A Database for German, English and Portuguese Nouns. *Symposium on Lexicography IX (Lexicographica. Series Maior 103)*, ed. by Mogensen, Jens; Viggo H. Pedersen; and Arne Zettersten, 143-164. Tübingen: Niemeyer.

Schierholz, Stefan J. 2001. *Präpositionalattribute. Syntaktische und semantische Analysen*. Tübingen: Niemeyer.

Schierholz, Stefan. 2004. Valenzvererbung? Präpositionalattributskonstruktionen und ihre Herleitung. *Die Valenztheorie. Bestandsaufnahme und Perspektiven,* ed. by Stanescu, Speranta, 79-96. Frankfurt a.M./New York: Lang.

Schierholz, Stefan. 2006. Die Präposition ‘um’. Eine Studie zur Semantik. *Contrastive Studies and Valency/ Kontrastive Studien und Valenz: Studies in honor of Hans Ulrich Boas/ Festschrift für Hans Ulrich Boas,* ed. by Steiner, Petra C.; Hans Christian Boas; and Stefan J. Schierholz, 39-68. Frankfurt am Main: Lang,

Schierholz, Stefan J.; and Dagmar Haumann (eds.) 1997. *Lexikalische und grammatische Eigenschaften präpositionaler Elemente.* Tübingen: Niemeyer.

Schmid, Helmut. 1994. Probabilistic Part-of-Speech Tagging Using Decision Trees. *Proceedings of the International Conference on New Methods in Language Processing*, Manchester, UK.

Schmid, Helmut. 1995. Improvements in Part-of-Speech Tagging with an Application to German. *Proceedings of the ACL SIGDAT-Workshop*. Dublin, Ireland.

Schøsler, Lene. 2007. The status of valency patterns. *Valency. Theoretical, Descriptive and Cognitive Issues*, ed. by Herbst, Thomas; and Katrin Götz-Votteler, 51-66. Berlin/New York: Mouton de Gruyter.

Schröder, Jochen.1986. *Lexikon deutscher Präpositionen.* Leipzig: Verlag Enzyklopädie.

Schulte im Walde, Sabine. 2002. A Subcategorisation Lexicon for German Verbs induced from a Lexicalised PDFG. *Proceedings of the 3rd Conference on Language Resources and Evaluation*, 1351-1357. Las Palmas de Gran Canaria, Spain.

Schulte im Walde, Sabine. 2004. Identification, quantitative description, and preliminary distributional analysis of German particle verbs. *Proceedings of the COLING Workshop on Enhancing and Using Electronic Dictionaries*, 85–88. Geneva.

Schulz, Dora; and Heinz Griesbach. 1970. *Grammatik der deutschen Sprache*. München: Hueber.

Schulze, Rainer. 1994. Image schemata and the semantics of ‘off’. *Kognitive Semantik/ Cognitive Semantics. Ergebnisse, Probleme, Perspektiven*, ed. by Schwarz, Monika, 197-214. Tübingen: Narr.

Schumacher, Helmut. 1986. *Verben in Feldern. Valenzwörterbuch zur Syntax und Semantik deutscher Verben*. Berlin/New York: de Gruyter.

Schumacher, Helmut; and Norbert Trautz. 1976. Bibliographie zur Valenz und Dependenz. *Untersuchungen zur Verbvalenz (Forschungsberichte des Instituts für deutsche Sprache 30)*, ed. by Schumacher, Helmut, 314-343. Tübingen: Narr.

Schumacher, Helmut; Jacqueline Kubczak; Renate Schmidt; and Vera de Ruiter. 2004. *VALBU – Valenzwörterbuch deutscher Verben.*Tübingen: Narr.

Sicherl, Eva. 1995. ‘Verb + Präpositions Kombinationen im Deutschen und Slowenischen. *Linguistics* 35.287-301.

Smith, Carlota S. 1997. *The Parameter of Aspect*. Dordrecht: Kluwer Academic Press.

Solstad, Torgrim. 2007. Lexical Pragmatics and Unification. The Semantics of German Causal ‘durch’ (‘through’). *Research on Language and Computation* 5. 481-502.

Somers, Harold L. 1987. *Valency and Case in Computational Linguistics*. Edinburgh: Edinburgh University Press.

Stefanowitsch, Anatol. 2007. Konstruktionsgrammatik und Korpuslinguistik. *Konstruktionsgrammatik. Von der Anwendung zur Theorie*, ed. by Fischer, Kerstin; and Anatol Stefanowitsch, 151-176. Tübingen: Stauffenburg.

Stefanowitsch, Anatol. 2008. Negative evidence and preemption: A constructional approach to ungrammaticality. *Cognitive Linguistics* 19.513-531.

Stefanowitsch, Anatol. 2011. Argument Structure: Item-Based or Distributed? *Zeitschrift für Anglistik und Amerikanistik (ZAA)* 59.369-386.

Steinitz, Renate. 1992. Mehrdeutigkeit in der Grammatik: ‘Auf’ und ‘an‘ - eine Fallstudie. *Fügungspotenzen. Zum 60. Geburtstag von Manfred Bierwisch*, ed. by Zimmermann, Ilse; and Anatoli Strigin, 163-188. Berlin: Akademie-Verlag.

Steinitz, Renate. 1997. Valenznotwendige Präpositionalphrasen. Weder Argument- noch Adjunktposition. *Sprache im Fokus. Festschrift für Heinz Vater zum 65. Geburtstag*, ed. by Dürscheid, Christa; Heinz Vater; Karl Heinz Ramers; Monika Schwarz, 329-350. Tübingen: Niemeyer.

Steyer, Kathrin. 2004. Kookkurrenz. Korpusmethodik, linguistisches Modell, lexikografische Perspektiven. *Wortverbindungen – mehr oder weniger fest*, ed. by Steyer, Kathrin, 87-116. Berlin/New York: Mouton de Gruyter.

Storrer, Angelika. 2003. Ergänzungen und Angaben. *Dependenz und Valenz. Ein internationales Handbuch der zeitgenössischen Forschung. Handbücher zur Sprach- und Kommunikationswissenschaft* (HSK), ed. by Agel, Vilmos; Eichinger, Ludwig M.; Hans-Werner Eroms; Peter Hellwig; Hans Jürgen Heringer, 764-780. Berlin: Mouton de Gruyter.

StowelI, Tim. 1983. Subjects across categories. *The Linguistic Review* 2.285-312.

Subirats, Carlos; and Miriam Petruck. 2003. Surprise! Spanish FrameNet! *Proceedings of the Workshop on Frame Semantics at the XVII. International Congress of Linguists*, Prague.

Takami, Ken-ichi. 1992. *Preposition Stranding. From syntactic to functional analyses*. Berlin: de Gruyter.

Taylor, John R. 1995. *Linguistic Categorization. Prototypes in Linguistic Theory*. Oxford: Oxford University Press.

Taylor, John R. 2003. Polysemy's paradoxes. *Language Sciences* 25.637-655.

Taylor, John R. 2012. *The mental corpus. How language is represented in the mind.* Oxford: Oxford University Press.

Tesnière, Lucien. 1959. *Elements de syntaxe structural*. Paris: Klincksieck.

Tomasello, Michael. 2003. *Constructing a Language. A Usage-Based Theory of Language Acquisition*. Cambridge, MA: Harvard University Press.

Trask, R. L. 1992. *A Dictionary of Grammatical Terms in Linguistics.* London/New York: Routledge.

Trask, R. L.; and Peter Stockwell. 2007. *Language and Linguistics. The Key Concepts*. New York: Routledge.

Traugott, Elisabeth. 2008. Grammatikalisierung, emergente Konstruktionen und der Begriff der "Neuheit." *Konstruktionsgrammatik II: Von der Konstruktion zur Grammatik*, ed. by Stefanowitsch, Anatol; and Kerstin Fischer, 5-32. Tübingen: Stauffenburg Verlag.

Tseng, Jesse L. 2000. *The Representation and Selection of Prepositions*. Ph.D. thesis, University of Edinburgh.

Tseng, Jesse. 2001. Rethinking lexical and functional prepositions. *On Prepositions*, ed. by Šarić, Ljiljana; and Donald F. Reindl, 283-327. Oldenburg: BIS.

Tseng, Jesse. 2004. Prepositions and complement selection. *Proceedings of the Second ACL-SIGSEM Workshop on the Linguistic Dimensions of Prepositions and their Use in Computational Linguistics Formalisms and Applications*, 11–19. Colchester.

Tungseth, Mai Ellin. 2006. *Verbal prepositions in Norwegian. Paths, places and possession*. Universitetet i Tromsø; University of Tromsø, http://munin.uit.no/bitstream/handle/10037/248/thesis.pdf?sequence=1. 11/30/2012.

Tyler, Andrea and Vyvyan Evans. 2001. Reconsidering prepositional polysemy networks: The case of 'over'. *Language* 77.724–65.

Tyler, Andrea and Vyvyan Evans. 2003. *The semantics of English Prepositions: Spatial Scenes, and the Polysemy of English Prepositions*. Cambridge: Cambridge University Press.

Välimaa-Blum, Riitta. 2005. *Cognitive Phonology in Construction Grammar: Analytic Tools for Students of English*. Berlin: de Gruyter.

Van der Gucht, Fieke; Klaas Willems; and Ludovic De Cuypere. 2007. The iconicity of embodied meaning. Polysemy of spatial prepositions in the cognitive framework. *Language Sciences* 29.733-754.

Van Valin, Robert D. Jr.; and David P. Wilkins. 1996. The case for 'effector': Case roles, agents, and agency revisited. *Grammatical constructions: Their form and meaning*, ed. by Shibatani, Masayoshi; and Sandra Thompson, 289–322. Oxford: Oxford University Press.

Vanderloise, Claude. 1990. Representation, prototypes, and centrality. *Meanings and Prototypes. Studies in Linguistic Categorization*, ed. by Tsohatzidis, Savas L., 403-437. London/New York: Routledge.

Vandermeeren, Sonja. 2004. Polysemie bei der Wechselpräposition 'in'. Eine kognitiv-linguistische Untersuchung. *Deutsche Sprache* 32.171-194.

Volk, Martin. 2001. *The Automatic Resolution of Prepositional Phrase - Attachment Ambiguities in German.* Habilitation thesis, Zürich: University of Zürich, Faculty of Arts.

Volk, Martin. 2006a. *German prepositions and their kin. A survey with respect to the resolution of PP attachment ambiguities. Text, Speech and Language Technology* 29.83-99.

Volk, Martin. 2006b. *How bad is the problem of PP-attachment? A comparison of English, German and Swedish. Proceedings of ACL-SIGSEM Workshop on Prepositions*, 81-88. Trento.

Volk, Martin; and Frida Tidström. 2007. *Comparing French PP-attachment to English, German and Swedish. Proceedings of Nodalida*, 191-198. Tartu.

Wahrig-Burfeind, Renate; and Gerhard Wahrig. 2000. *Deutsches Wörterbuch. Mit einem "Lexikon der deutschen Sprachlehre"*. Gütersloh/München: Bertelsmann-Lexikon-Verlag.

Waldenberger, Sandra. 2009. *Präpositionen und Präpositionalphrasen im Mittelhochdeutschen*. Tübingen: Niemeyer.

Wasow, Thomas; and Jennifer Arnold. 2005. Intuitions in Linguistic Argumentation. *Lingua* 115.1481-1496.

Wechsler, Stephen. 1995. Preposition Selection Outside the Lexicon. *Proceedings of the Thirteenth West Coast Conference on Formal Linguistics*, ed. by Aranovich, Raul; William Byrne; Susanne Preuss; and Martha Senturia, 416-431. Stanford: CSLI.

Wege, Barbara. 1997. Skalare Präpositionen. *Lexikalische und grammatische Eigenschaften präpositionaler Elemente*, ed. by Haumann, Dagmar; and Stefan Schierholz, 19-46. Tübingen: Niemeyer.

Welke, Klaus. 1993. *Funktionale Satzperspektive. Ansätze und Probleme der funktionalen Grammatik*. Münster: Nodus Publikationen.

Welke, Klaus. 1994. Thematische Relationen. Sind thematische Relationen semantisch, syntaktisch oder/und pragmatisch zu definieren? *Deutsche Sprache* 22.1-18.

Welke, Klaus. 2001. Was heißt 1., 2., 3. Argument? *Valenztheorie – Einsichten und Ausblicke,* ed. by Thielemann, Werner; and Klaus Welke, 169-190. Münster: Nodus-Publikationen.

Welke, Klaus. 2002. *Deutsche Syntax funktional. Perspektiviertheit syntaktischer Strukturen*. Tübingen: Stauffenburg.

Welke, Klaus. 2009. Valenztheorie und Konstruktionsgrammatik. *Zeitschrift für Germanistische Linguistik* 37.81-124.

Welke, Klaus. 2011. *Valenzgrammatik des Deutschen. Eine Einführung.* Berlin/New York: Mouton de Gruyter.

Wheeler, Rebecca S. 1996. Will The Real Search Verbs Please Stand Up? *CLS 32: The Main Sesssion*, ed. by McNair, Lisa, 393-407. Chicago: Chicago Linguistic Society.

Willems, Klaas. 2006. Indeterminiertheit, Valenzvariation und Verbbedeutung vom Gesichtspunkt der funktionellen Syntax. *Zeitschrift für Germanistische Linguistik* 34.178-206.

Willems, Klaas; Ann Coene. 2006. Satzmuster und Konstruktionalität der Verbbedeutung. Überlegungen zum Verhältnis von Konstruktionsgrammatik und Valenztheorie. *Sprachwissenschaft* 31.237-272.

Wotjak, Gerd. 1971. *Untersuchungen zur Struktur der Bedeutung.* Berlin: Akademieverlag.

Wunderlich, Dieter. 1984. Zur Syntax der Präpositionalphrasen im Deutschen. *Zeitschrift für Sprachwissenschaft* 3.65-99.

Wunderlich, Dieter. 1991. How do prepositional phrases fit into compositional syntax and semantics? *Linguistics* 29.591-621.

Zelinsky-Wibbelt, Cornelia (ed.) 1994. *The Semantics of Prepositions: From Mental Processing to Natural Language Processing*. Berlin/New York: Mouton de Gruyter.

Ziem, Alexander; and Alexander Lasch (ed.) 2013. *Grammatik als Inventar von Konstruktionen? Sprachliches Wissen im Fokus der Konstruktionsgrammatik*. Berlin/New York: de Gruyter, in prep.

Zifonun, Gisela; Ludger Hoffman; and Bruno Stecker (eds.) 1997. *Grammatik der deutschen Sprache*. Berlin/New York: Mouton de Gruyter.

Zwarts, Joost. 1997. Lexical and functional prepositions. *Lexikalische und grammatische Eigenschaften präpositionaler Elemente,* ed. by Haumann, Dagmar; and Stefan J. Schierholz, 1-18. Tübingen: Niemeyer.